



Lawrence Berkeley Laboratory

UNIVERSITY OF CALIFORNIA

Prepared for publication in the book Nuclear and Radiochemistry
(3rd Edition); Gerhart Friedlander, Joseph W. Kennedy, Edward
S. Macias, and Julian Malcolm Miller, John Wiley and Sons, Inc.,
New York (1980)

TABLE OF NUCLIDES

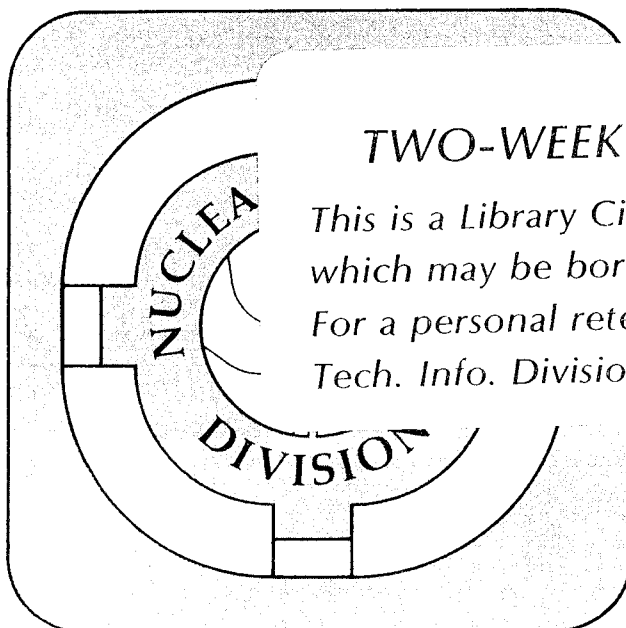
V. S. Shirley and C. M. Lederer

January 1980

RECEIVED
LAWRENCE
BERKELEY LABORATORY

MAR 28 1980

LIBRARY AND
DOCUMENTS SECTION



TWO-WEEK LOAN COPY

*This is a Library Circulating Copy
which may be borrowed for two weeks.
For a personal retention copy, call
Tech. Info. Division, Ext. 6782.*

TABLE OF NUCLIDES

V. S. Shirley

C. M. Lederer

Isotopes Project
Nuclear Science Division
Lawrence Berkeley Laboratory
University of California
Berkeley, California 94720

January 1980

TABLE OF NUCLIDES

V.S. Shirley
C.M. Lederer

This table presents properties of nuclides, both stable and radioactive, adopted from the 7th edition of the *Table of Isotopes*.¹ The data are based on experimental results reported in the literature, with the cutoff date varying from January to December, 1977. (The earliest date refers to the lightest nuclides, and *vice versa*.) Most mass excesses are from the 1977 Atomic Mass Evaluation,² with some recent experimental values added. For a few of the very unstable nuclides for which no values were reported in the 1977 Atomic Mass Evaluation, estimates are taken from the tables of W.D. Myers.³ Natural isotopic abundances⁴ and neutron cross sections⁵ are taken from compilations by N.E. Holden. For other references, original data, and information on the data measurements, the reader is referred to reference 1.

Column 1, Nuclide:

Nuclides are listed in order of increasing atomic number (Z), and are subordered by increasing mass number (A). All isotopic species with half-lives longer than about 1 s are included, as are the few shorter lived ground states, fission isomers, and "historic" isomers (e.g., ^{24m}Na). Isotopes in reference 1 with ambiguous or very uncertain assignments, or whose assignments are probably in error (class "G"), have been omitted. Also not included are those nuclides identified in nuclear reactions, but for which radioactive decay has not been observed (class "R" in reference 1). Isomeric states are denoted by the conventional symbols m, m₁, m₂, etc. Identical mass assignments (with no "m") for several species indicate that the relative positions of the isomers are unknown.

Column 2, t_{1/2} or abundance:

Half-lives are given in plain type, natural isotopic abundances in italics. Half-lives are rounded so that the uncertainty is ≤5 units in the last place. A question mark following the half-life indicates that the assignment of the half-life (and other measured decay properties) to the listed values of Z and A is rather uncertain (nuclides with class "F" in reference 1).

Abundances are also rounded to an uncertainty of ≤5 units in the last place, although the uncertainties are not well known. (Note that, because of the rounding, the abundances for an element do not always add to exactly 100%.) For additional information on abundances observed in specific sources and variations in abundances, the reader is referred to references 1 and 4.

Column 3, Decay Mode:

β^- negative beta decay

β^+ and/or EC positive beta decay. The entry of these modes alone or in various combinations involves the following conventions -- β^+ , EC or EC, β^+ : both β^+ and EC have been shown experimentally to occur, with the first-named mode probably dominant from theoretical considerations (percentage branchings are given when known -- e.g., EC 90%, β^+ 10%); β^+ : β^+ has been observed or inferred from genetic relationships, with EC probably ≤1% from theoretical considerations (*vice versa* for EC); β^+ +EC or EC+ β^+ : the first-named mode has been observed or inferred from genetic relationships; the second mode is probably ≥1% from theoretical considerations.

IT isomeric transition (γ -ray and conversion-electron decay)

α alpha decay

SF spontaneous fission (listed only if branching by this mode is ≥1%)

p direct proton decay (^{53m}Co)

$\beta^-\beta^-$ double negatron emission

β^-n "delayed" neutron emission following β^- decay to unbound states. Other delayed particle-emission modes include $\beta^-\alpha$, β^+p , $\beta^+\alpha$, β^+SF , etc.

2 α , n α , etc. various decay modes for particle-unstable nuclides.

Decay modes inferred from the means of production are enclosed in square brackets. For nuclides that decay by more than one mode, branching ratios are given if known; they are rounded so that the uncertainty is ≤5 units in the last place.

Column 4, Δ :

Mass excesses are given in MeV, with $\Delta(^{12}\text{C})$ defined as zero. Values are quoted to the number of significant figures implied in reference 2, except that very precise values have been rounded to the nearest keV. An appended s denotes a mass excess estimated from systematic considerations.

Column 5, $J\pi$:

Spin and parity assignments without parentheses are definite; assignments in parentheses are probable. Values enclosed in square brackets are inferred from systematics.

Column 6, σ_n :

Neutron cross sections are given in b (barn $\equiv 10^{-24}$ cm²); and, in the absence of additional notation, refer to thermal neutron capture cross sections [$\sigma_c = \sigma(n, \gamma)$] at a neutron velocity of 2200 m/s ($E = 0.0253$ eV, or $T = 293$ °K). A superscript sc following the value indicates a cross-section measurement with "subcadmium" neutrons, those with energy $\lesssim 0.5$ eV to which a cadmium absorber is "opaque"; the superscript rs refers to "reactor spectrum" neutrons, with an energy spectrum that is not well defined but which is approximately characteristic of a "thermal" irradiation position in a reactor. The subscripts f (fission), a (total absorption), α [$\sigma(n, \alpha)$], and np [$\sigma(n, p)$] identify cross sections other than the capture cross section. m and g as subscripts stand for "metastable" and "ground", and are used wherever separate cross sections are reported for capture to ground and isomeric states. For those cases for which a single total cross section includes both direct capture and indirect capture via the isomeric states, the subscript g+m is used. For additional details, the reader is referred to reference 1.

References

- 1) *Table of Isotopes*, 7th edition: C.M. Lederer and V.S. Shirley, editors; E. Browne, J.M. Dairiki, and R.E. Doebler, principal authors; A.A. Shihab-Eldin, L.J. Jardine, J.K. Tuli, and A.B. Buyrn, authors, John Wiley and Sons, Inc., New York (1978).
- 2) A.H. Wapstra and K. Bos, *Atomic Data and Nucl. Data Tables* 19, 175(1977) and 20, 1(1977); Errata: *Atomic Data and Nucl. Data Tables* 20, 126(1977).
- 3) W.D. Myers, *Droplet Model of Atomic Nuclei*, IFI/Plenum Data Company, New York (1977); see also: *Atomic Data and Nucl. Data Tables* 17, 474 (1976).
- 4) N.E. Holden, Brookhaven National Laboratory Report No. BNL-NCS-50605, 1977 (unpublished).
- 5) N.E. Holden, private communication to C.M. Lederer and V.S. Shirley (1977).

Work performed under the auspices of the U.S. Department of Energy. Additional funding provided by the U.S. National Bureau of Standards, Office of Standard Reference Data.

TABLE OF NUCLIDES

Nuclide			Abundance	Decay	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A	or $t_{1/2}$	Mode			
0	n	1	10.6 m	β^- , no γ	8.071	1/2+	
1	H	1	99.985%		7.289	1/2+	0.332
		2	0.0148%		13.136	1+	5.2×10^{-4}
		3	12.33 y	β^- , no γ	14.950	1/2+	$< 6 \times 10^{-6}$ sc
2	He	3	$1.38 \times 10^{-4}\%$		14.931	1/2+	5.33×10^3 np
		4	99.99986%		2.425	0+	
		6	0.808 s	β^- , no γ	17.597	0+	
		8	0.122 s	β^- , β^-n 12%	31.609	0+	
3	Li	6	7.5%		14.087	1+	942 na
		7	92.5%		14.908	3/2-	0.045 rs
		8	0.84 s	$\beta^-2\alpha$	20.947	2+	
		9	0.178 s	β^- , $\beta^-n2\alpha$ 35%	24.955	(3/2)-	
		11	8.5 ms	β^- , β^-n 61%	40.94		
4	Be	7	53.3 d	EC	15.770	3/2-	5×10^4 rs np
		9	100%		11.348	3/2-	0.008
		10	1.6×10^6 y	β^- , no γ	12.608	0+	< 0.001 rs
		11	13.8 s	β^- , β^-n 3%	20.176	1/2+	
		12	11.4 ms	β^- , β^-n	25.03	0+	
5	B	8	0.769 s	$\beta^+2\alpha$	22.922	2+	
		10	19.8%		12.052	3+	3838 na
		11	80.2%		8.668	3/2-	0.005 rs
		12	20.4 ms	β^- , $\beta^-3\alpha$ 1.6%	13.370	1+	
		13	17.4 ms	β^- , β^-n 0.28%	16.562	3/2-	
		14	16 ms	β^-	23.657	2-	
6	C	9	0.1265 s	$\beta^+p2\alpha$	28.912	(3/2)-	
		10	19.2 s	β^+	15.703	0+	
		11	20.38 m	β^+ 99.76%, EC 0.24%, no γ	10.650	3/2-	
		12	98.89%		0	0+	0.0034
		13	1.13%		3.125	1/2-	9×10^{-4}
		14	5730 y	β^- , no γ	3.020	0+	$< 1 \times 10^{-6}$ rs
		15	2.449 s	β^-	9.873	1/2+	
		16	0.75 s	β^-n >98.8%	13.693	0+	
7	N	12	11.0 ms	β^+ , $\beta^+3\alpha$ 3.5%	17.338	1+	
		13	9.96 m	β^+ , no γ	5.346	1/2-	
		14	99.63%		2.863	1+	1.82 sc np
		15	0.366%		0.102	1/2-	4×10^{-5} rs
		16	7.13 s	β^- , β^-n 0.0012%	5.682	2-	
		17	4.17 s	β^- , β^-n 95%	7.870	1/2-	
		18	0.63 s	β^-	13.274	0, 1, 2-	
8	O	13	8.9 ms	β^+p	23.105	3/2-	
		14	70.60 s	β^+	8.008	0+	
		15	122 s	β^+ 99.89%, EC 0.11%, no γ	2.855	1/2-	
		16	99.76%		-4.737	0+	1.8×10^{-4} rs
		17	0.038%		-0.810	5/2+	0.235 sc na
		18	0.204%		-0.783	0+	1.6×10^{-4}
		19	26.9 s	β^-	3.331	5/2+	
		20	13.5 s	β^-	3.799	0+	
9	F	17	64.5 s	β^- , no γ	1.952	5/2+	
		18	109.8 m	β^+ 96.9%, EC 3.1%, no γ	0.872	1+	
		19	100%		-1.487	1/2+	0.010 rs
		20	11.0 s	β^-	-0.017	2+	
		21	4.32 s	β^-	-0.047	5/2+	
		22	4.23 s	β^-	2.826	4+	
		23	2.2 s	β^-	3.35	(5/2)+	
10	Ne	17	0.109 s	β^+p	16.478	1/2-	
		18	1.67 s	β^+	5.319	0+	
		19	17.3 s	β^+ 99+%, EC 0.102%	1.751	1/2+	
		20	90.51%		-7.043	0+	0.038 rs
		21	0.27%		-5.733	3/2+	0.7 rs

TABLE OF NUCLIDES

Nuclide			Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A					
10	Ne	22	9.22%		-8.026	0+	0.05 ^{rs}
		23	37.6 s	β^-	-5.155	5/2+	
		24	3.38 m	β^-	-5.949	0+	
		25	0.60 s	β^-	-2.15	(1/2)+	
11	Na	20	0.446 s	$\beta^+, \beta^+ \alpha$ 21%	6.844	2+	
		21	22.47 s	β^+	-2.186	3/2+	
		22	2.602 y	β^+ 90.5%, EC 9.5%	-5.184	3+	3.2 $\times 10^4$
		23	100%		-9.530	3/2+	0.43 _m 0.10 _g
		24	15.02 h	β^-	-8.418	4+	
	24m	20.2 ms		IT, β^- (weak)	-7.945	1+	
		25	60 s	β^-	-9.357	5/2+	
		26	1.07 s	β^-	-6.888	3+	
		27	0.30 s	$\beta^-, \beta^- n$ 0.08%	-5.63	3/2, 5/2+	
		28	31 ms	$\beta^-, \beta^- n$ 0.6%	-1.13	1+	
		29	43 ms	$\beta^-, \beta^- n$ 15%	2.66		
		30	54 ms	$\beta^-, \beta^- n$ 33%	8.38		
		31	17 ms	$\beta^-, \beta^- n$ 30%	10.61		
		32	14.5 ms	β^-	16.41		
		33	0.02 s	β^-			
12	Mg	21	123 ms	$\beta^+ p$	10.912	5/2+	
		22	3.86 s	β^+	-0.394	0+	
		23	11.3 s	β^+	-5.471	3/2+	
		24	78.99%		-13.931	0+	0.053 ^{rs}
		25	10.00%		-13.191	5/2+	0.18 ^{rs}
		26	11.01%		-16.212	0+	0.038
		27	9.46 m	β^-	-14.585	1/2+	0.15 ^{rs}
		28	21.0 h	β^-	-15.016	0+	
		29	1.4 s	β^-	-10.75	(3/2+)	
		30	1.2 s	β^-	-9.79 s	0+	
13	Al	23	0.47 s	$\beta^+, \beta^+ p$	6.768		
		24	2.07 s	$\beta^+, \beta^+ \alpha$ 0.0077%	-0.052	4+	
	24m	0.13 s		IT 93%, β^+ 7%, $\beta^+ \alpha$	0.387	1+	
		25	7.18 s	β^+	-8.913	5/2+	
		26	7.2 $\times 10^5$ y	β^+ 82%, EC 18%	-12.208	5+	
	26m	6.36 s		$\beta^+, \text{no } \gamma$	-11.979	0+	
		27	100%		-17.194	5/2+	0.231
		28	2.24 m	β^-	-16.848	3+	
		29	6.6 m	β^-	-18.212	5/2+	
		30	3.69 s	β^-	-15.89	(2,3)+	
		31	0.64 s	β^-	-15.10	5/2, 3/2+	
14	Si	25	0.22 s	$\beta^+, \beta^+ p$	3.824	3/2, 5/2+	
		26	2.21 s	β^+	-7.143	0+	
		27	4.13 s	β^+	-12.385	5/2+	
		28	92.23%		-21.491	0+	0.17 ^{rs}
		29	4.67%		-21.894	1/2+	0.10 ^{rs}
		30	3.10%		-24.432	0+	0.108
		31	2.62 h	β^-	-22.949	3/2+	0.5 ^{rs}
		32	≈ 650 y	$\beta^-, \text{no } \gamma$	-24.092	0+	
		33	6.2 s	β^-	-20.57		
		34	2.8 s	β^-	-19.85	0+	
15	P	28	270 ms	β^+	-7.160	3+	
		29	4.1 s	β^+	-16.949	1/2+	
		30	2.50 m	β^+, EC	-20.204	1+	
		31	100%		-24.440	1/2+	0.18 ^{rs}
		32	14.28 d	$\beta^-, \text{no } \gamma$	-24.305	1+	
		33	25.3 d	$\beta^-, \text{no } \gamma$	-26.337	1/2+	
		34	12.4 s	β^-	-24.55	1+	
		35	47 s	β^-	-24.94	(1/2, 3/2)+	
16	S	29	0.19 s	$\beta^+, \beta^+ p$	-3.16	5/2+	
		30	1.2 s	β^+	-14.062	0+	
		31	2.6 s	β^+	-19.044	1/2+	
		32	95.02%		-26.015	0+	0.53 ^{rs}
		33	0.75%		-26.586	3/2+	0.09 _{nd} ^{rs}
		34	4.21%		-29.931	0+	0.24 ^{rs}
		35	87.4 d	$\beta^-, \text{no } \gamma$	-28.846	3/2+	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
16	S	36	0.017%	-30.666	0+	0.15 ^{rs}
		37	5.0 m β^-	-26.908	5/2, 7/2-	
		38	170 m β^-	-26.862	0+	
17	Cl	32	$\beta^+, \beta^+p \approx 0.007\%$, $\beta^+a \approx 0.01\%$	-13.329	1+	
		33	2.51 s β^+	-21.003	3/2+	
		34	1.526 s $\beta^+, \text{no } \gamma$	-24.438	0+	
		34m	32.0 m $\beta^+ 53\%, \text{IT } 47\%$	-24.292	3+	
		35	75.77%	-29.014	3/2+	43
		36	3.00×10^5 y $\beta^- 98.1\%, \text{EC } 1.9\%$, $\beta^+ 0.0017\%, \text{no } \gamma$	-29.522	2+	< 1 ^{rs}
		37	24.23%	-31.762	3/2+	0.428 ^g 0.005 ^m
		38	37.3 m β^-	-29.798	2-	
		38m	0.715 s IT	-29.127	5-	
		39	56 m β^-	-29.803	3/2+	
		40	1.35 m β^-	-27.54	2-	
		40	0.10 s? $\beta^-?$			
		41	34 s β^-	-27.40	(1/2, 3/2)+	
18	Ar	33	0.18 s $\beta^+, \beta^+p 34\%$	-9.385	1/2+	
		34	0.844 s β^+	-18.379	0+	
		35	1.78 s β^+	-23.049	3/2+	
		36	0.337%	-30.231	0+	5 ^{rs}
		37	35.0 d EC, no γ	-30.948	3/2+	
		38	0.063%	-34.715	0+	0.8 ^{rs}
		39	269 y $\beta^-, \text{no } \gamma$	-33.241	7/2-	600 ^{rs}
		40	99.60%	-35.040	0+	0.64
		41	1.83 h β^-	-33.068	7/2-	0.5 ^{rs}
		42	33 y $\beta^-, \text{no } \gamma$	-34.42	0+	
		43	5.4 m β^-	-31.98		
		44	11.9 m β^-	-32.271	0+	
19	K	36	0.34 s β^+	-17.426	2+	
		37	1.23 s β^+	-24.799	3/2+	
		38	7.61 m β^+	-28.802	3+	
		38m	0.93 s $\beta^+, \text{no } \gamma$	-28.671	0+	
		39	93.26%	-33.806	3/2+	2.1 ^{rs}
		40	0.0117% 1.28×10^9 y $\beta^- 89.3\%, \text{EC } 10.7\%$, $\beta^+ 0.0010\%$	-33.535	4-	70 ^{rs}
		41	6.73%	-35.560	3/2+	1.46
		42	12.36 h β^-	-35.023	2-	
		43	22.3 h β^-	-36.588	3/2+	
		44	22.1 m β^-	-35.807	2-	
		45	20 m β^-	-36.611	3/2+	
		46	115 s β^-	-35.420	(2-)	
		47	17.5 s β^-	-35.698	1/2+	
		48	6.8 s β^-	-32.22	(2-)	
		49	≈ 2 s? β^-			
		50	≈ 0.3 s? β^-	-23.57 s		
20	Ca	37	0.173 s β^+, β^+p	-13.164	3/2+	
		38	0.44 s β^+	-22.060	0+	
		39	0.86 s $\beta^+, \text{no } \gamma$	-27.282	3/2+	
		40	96.94%	-34.847	0+	0.4 ^{rs}
		41	1.0×10^5 y EC, no γ	-35.138	7/2-	
		42	0.647%	-38.544	0+	0.7 ^{rs}
		43	0.135%	-38.405	7/2-	6 ^{rs}
		44	2.09%	-41.466	0+	0.88
		45	165 d β^-	-40.810	7/2-	
		46	0.0035%	-43.138	0+	0.7 ^{rs}
		47	4.536 d β^-	-42.343	7/2-	
		48	0.187%	-44.216	0+	1.1 ^{rs}
		49	8.72 m β^-	-41.286	(3/2)-	
		50	14 s β^-	-39.572	0+	
21	Sc	40	182 ms β^+, β^+p	-20.527	4-	
		41	0.596 s $\beta^+, \text{no } \gamma$	-28.644	7/2-	
		42	682 ms $\beta^+, \text{no } \gamma$	-32.121	0+	
		42m	62.0 s β^+	-31.503	7+	

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
21	Sc	43	3.89 h	β^+ +EC	-36.185	7/2-	
		44	3.93 h	β^+ 95%, EC 5%	-37.811	2+	
		44m	2.44 d	IT 98.61%, EC 1.39%	-37.540	6+	
		45	100%		-41.066	7/2-	17 ^{rs} 9 ^{rs} m
		45m	0.31 s	IT	-41.054	3/2+	
		46	83.80 d	β^-	-41.756	4+	8 ^{sc}
		46m	18.7 s	IT	-41.613	1-	
		47	3.42 d	β^-	-44.330	7/2-	
		48	43.7 h	β^-	-44.498	6+	
		48	3 h?	?			
		49	57.0 m	β^-	-46.555	(7/2)-	
		50	1.71 m	β^-	-44.539	(5)+	
		50m	0.35 s	IT	-44.282	(2)+	
		51	12.4 s	β^-	-43.220	(7/2)-	
		41	80 ms	β^+p	-15.78	3/2+	
		42	0.20 s	β^+	-25.122	0+	
		43	0.49 s	β^+ , no γ	-29.324		
22	Ti	44	47 y	EC	-37.546	0+	
		45	3.09 h	β^+ , EC	-39.004	7/2-	
		46	8.2%		-44.123	0+	0.6 ^{rs}
		47	7.4%		-44.931	5/2-	1.7 ^{rs}
		48	73.7%		-48.488	0+	7.9 ^{rs}
		49	5.4%		-48.559	7/2-	2.1 ^{rs}
		50	5.2%		-51.432	0+	0.179
		51	5.80 m	β^-	-49.733	3/2-	
		52	1.7 m	β^-	-49.469	0+	
		53	33 s	β^-	-46.84	(3/2)-	
		44	0.09 s	$[\beta^+], \beta^+\alpha$	-23.85 s		
		46	0.423 s	β^+ , no γ	-37.071	0+	
		47	32.6 m	β^+ +EC	-42.001	3/2-	
23	V	48	15.976 d	EC 50.4%, β^+ 49.6%	-44.473	4+	
		49	330 d	EC, no γ	-47.957	7/2-	
		50	0.250%		-49.219	6+	50
		51	99.750%		-52.199	7/2-	4.88
		52	3.76 m	β^-	-51.439	3+	
		53	1.6 m	β^-	-51.863	7/2-	
		54	43 s	β^-	-49.93		
		45	0.05 s	β^+p	-19.46	[7/2-]	
		46	0.26 s	β^+ , no γ	-29.461	0+	
		48	21.56 h	EC	-42.818	0+	
24	Cr	49	41.9 m	β^+ , EC	-45.329	5/2-	
		50	4.35%		-50.258	0+	15.9
		51	27.70 d	EC	-51.448	7/2-	
		52	83.79%		-55.415	0+	0.8 ^{rs}
		53	9.50%		-55.284	3/2-	18 ^{rs}
		54	2.36%		-56.931	0+	0.38 ^{rs}
		55	3.55 m	β^-	-55.106	3/2-	
		56	5.9 m	β^-	-55.265	0+	
		50	0.283 s	β^+ , no γ	-42.626	0+	
		50m	1.74 m	β^+	-42.40	5+	
25	Mn	51	46.2 m	β^+ +EC	-48.240	5/2-	
		52	5.59 d	EC 72%, β^+ 28%	-50.704	6+	
		52m	21.1 m	β^+ +EC 98.25%, IT 1.75%	-50.326	2+	
		53	3.7 $\times 10^6$ y	EC, no γ	-54.687	7/2-	70 ^{rs}
		54	312 d	EC	-55.554	3+	<10 ^{rs}
		55	100%		-57.710	5/2-	13.3
		56	2.579 h	β^-	-56.909	3+	
		57	1.6 m	β^-	-57.487	5/2-	
		58	65 s	β^-	-55.802	3+	
		58	3.0 s	β^- , no γ	-55.832	(0+)	
26	Fe	49	0.07 s	$[\beta^+], \beta^+p$	-24.47		
		52	8.27 h	β^+ 57%, EC 43%	-48.332	0+	
		53	8.51 m	β^+ , EC	-50.944	7/2-	
		53m	2.53 m	IT	-47.904	19/2-	

TABLE OF NUCLIDES

Z	Element	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
26	Fe	54	5.8%		-56.251	0+	2.2 ^{rs}
		55	2.7 y	EC, no γ	-57.479	3/2-	
		56	91.8%		-60.604	0+	2.6 ^{rs}
		57	2.15%		-60.179	1/2-	2.4 ^{rs}
		58	0.29%		-62.152	0+	1.14
		59	44.6 d	β^-	-60.661	3/2-	
		60	3×10^5 y	β^-	-61.437	0+	
		61	6.0 m	β^-	-59.01	(3/2)-	
		62	68 s	β^-	-58.86	0+	
27	Co	53	0.26 s	β^+ , no γ	-42.640	[7/2-]	
		53m	0.25 s	$\beta^+ \approx 98.5\%$, p $\approx 1.5\%$	-39.453	[19/2-]	
		54	193.2 ms	β^+ , no γ	-48.010	0+	
		54m	1.46 m	β^+	-47.811	(7+)	
		55	17.5 h	β^+ 77%, EC 23%	-54.024	7/2-	
		56	78.8 d	EC 81%, β^+ 19%	-56.037	4+	
		57	271 d	EC	-59.342	7/2-	
		58	70.8 d	EC 85.00%, β^+ 15.00%	-59.844	2+	1.9×10^3
		58m	9.2 h	IT	-59.819	5+	1.4×10^5
		59	100%		-62.226	7/2-	19_m 18_g
		60	5.271 y	β^-	-61.647	5+	2.0 ^{sc}
		60m	10.5 m	IT 99.75%, β^- 0.25%	-61.588	2+	58 ^{sc}
		61	1.65 h	β^-	-62.897	7/2-	
		62(g)	1.50 m	β^-	-61.430	(2)+	
		62(m)	13.9 m	β^-	-61.408	(5)+	
		63	27.5 s	β^-	-61.850	7/2, 5/2-	
		64	0.3 s	β^-	-59.791	(1+)	
28	Ni	53	0.05 s	$\{\beta^+\}, \beta^+p$	-29.41	[7/2-]	
		56	6.10 d	EC	-53.902	0+	
		57	36.0 h	EC 60%, β^+ 40%	-56.077	3/2-	
		58	68.3%		-60.224	0+	4.6 ^{rs}
		59	7.5×10^4 y	EC 99+%, β^+ $1.5 \times 10^{-5}\%$, no γ	-61.153	3/2-	92 _a
		60	26.1%		-64.470	0+	2.8 ^{rs}
		61	1.13%		-64.219	3/2-	2 ^{rs}
		62	3.59%		-66.745	0+	14.2
		63	100 y	β^- , no γ	-65.513	1/2-	23 ^{rs}
		64	0.91%		-67.098	0+	1.49
		65	2.520 h	β^-	-65.124	5/2-	24 ^{sc}
		66	54.8 h	β^- , no γ	-66.021	0+	
		67	18 s	β^-	-63.47		
29	Cu	58	3.20 s	β^+	-51.662	1+	
		59	82 s	β^+	-56.352	3/2-	
		60	23.4 m	β^+ 93%, EC 7%	-58.343	2+	
		61	3.41 h	β^+ 62%, EC 38%	-61.981	3/2-	
		62	9.73 m	β^+ 97.8%, EC 2.2%	-62.796	1+	
		63	69.2%		-65.578	3/2-	4.4
		64	12.70 h	EC 41%, β^+ 19%, β^- 40%	-65.423	1+	
		65	30.8%		-67.262	3/2-	2.17
		66	5.10 m	β^-	-66.257	1+	140 ^{sc}
		67	61.9 h	β^-	-67.305	3/2-	
		68	31 s	β^-	-65.39	1+	
		68m	3.8 m	IT 86%, β^- 14%	-64.66	(6-)	
		69	3.0 m	β^-	-65.94	(3/2)-	
		70(g)	5 s	β^-	-63.39	1+	
		70(m)	47 s	β^-	-63.25	(5-)	
30	Zn	57	0.04 s	$\{\beta^+\}, \beta^+p$	-32.61	[7/2-]	
		60	2.4 m	$\beta^+ \approx 97\%$, EC $\approx 3\%$	-54.184	0+	
		61	89.1 s	$\beta^+ \approx 99\%$, EC $\approx 1\%$	-56.58	3/2-	
		62	9.2 h	EC 93%, β^+ 7%	-61.169	0+	
		63	38.1 m	β^+ 93%, EC 7%	-62.211	3/2-	
		64	48.6%		-66.001	0+	0.78
		65	244.1 d	EC 98.54%, β^+ 1.46%	-65.910	5/2-	
		66	27.9%		-68.898	0+	1 ^{rs}

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
30	Zn	67	4.10%		-67.880	5/2-	7 ^{rs}
		68	18.8%		-70.006	0+	0.81 ^g 0.072 ^m
		69	56 m	β^-	-68.417	1/2-	
		69m	14.0 h	IT 99+%, β^- 0.033%	-67.978	9/2+	
		70	0.62%		-69.560	0+	0.09 ^g 0.0082 ^m
		71	2.4 m	β^-	-67.324	1/2-	
		71m	3.9 h	β^-	-67.167	(9/2)+	
		72	46.5 h	β^-	-68.134	0+	
		73	24 s	β^-	-65.03		
		74	95 s	β^-	-65.67	0+	
		75	10.2 s	β^-	-62.46 s		
		76	5.7 s	β^-	-62.55	0+	
		77	1.4 s	β^-	-58.91 s		
		79	2.6 s?	β^-n			
31	Ga	62	118 ms	β^+	-51.77 s	(0+)	
		63	32 s	β^+	-56.69	3/2,5/2-	
		64	2.62 m	$\beta^+ + \text{EC}$	-58.836	0+	
		65	15.2 m	β^+ 86%, EC 14%	-62.654	3/2-	
		66	9.4 h	β^+ 56.5%, EC 43.5%	-63.723	0+	
		67	78.3 h	EC	-66.878	3/2-	
		68	68.1 m	β^+ 90%, EC 10%	-67.085	1+	
		69	60.1%		-69.322	3/2-	1.7
		70	21.1 m	β^- 99.8%, EC 0.2%	-68.905	1+	
		71	39.9%		-70.142	3/2-	4.6
		72	14.10 h	β^-	-68.591	3-	
		73	4.87 h	β^-	-69.73	(3/2)-	
		74	8.1 m	β^-	-68.02	(4)-	
		74m	10 s	IT	-67.96	1+	
		75	2.10 m	β^-	-68.56	(3/2-)	
		76	27.1 s	β^-	-66.44	(3-)	
		77	13 s	β^-	-66.41 s		
		78	5.1 s	β^-	-63.68		
		79	3.0 s	β^-	-62.80		
		80	1.66 s	β^-, β^-n	-59.53 s		
		81	1.2 s	β^-, β^-n			
		82	0.60 s?	$[\beta^-], \beta^-n$			
		83	0.31 s	$[\beta^-], \beta^-n$			
32	Ge	64	64 s	$\beta^+ + \text{EC}$	-54.43	0+	
		65	31 s	$\beta^+ + \text{EC}$, ($\beta^+ + \text{EC}$)p 0.013%	-56.41	3/2,5/2-	
		66	2.3 h	EC 73%, β^+ 27%	-61.621	0+	
		67	19.0 m	β^+ 96%, EC 4%	-62.45	(1/2)-	
		68	288 d	EC, no γ	-66.972	0+	
		69	39.0 h	EC 64%, β^+ 36%	-67.096	5/2-	
		70	20.5%		-70.561	0+	3.2 ^{rs}
		71	11.2 d	EC, no γ	-69.906	1/2-	
		72	27.4%		-72.583	0+	1.0 ^{rs} 15 ^{rs}
		73	7.8%		-71.294	9/2+	
		73m	0.50 s	IT	-71.227	1/2-	
		74	36.5%		-73.422	0+	0.4 ^{rs} 0.16 ^{rs}
		75	82.8 m	β^-	-71.856	1/2-	
		75m	48 s	IT 99.97%, β^- 0.03%	-71.716	7/2+	
		76	7.8%		-73.214	0+	0.10 ^{rs} 0.06 ^{rs}
		77	11.30 h	β^-	-71.214	7/2(+)	
		77m	53 s	β^- 80%, IT 20%	-71.055	1/2-	
		78	1.45 h	β^-	-71.76	0+	
		79	19 s?	β^-			
		79	42 s	β^-	-69.56	(1/2)-	
		80	29 s	β^-	-69.43	0+	
		81	10 s	β^-	-66.34 s		
		82	4.6 s	β^-	-65.99 s	0+	
		83	1.9 s	β^-	-62.5 s		

TABLE OF NUCLIDES

Z	El	A	Nuclide	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
32	Ge	84		1.2 s	β^-		0+	
33	As	68		2.6 m	β^+	-58.77 s		
		69		15 m	β^+ 98%, EC 2%	-63.12	(5/2)-	
		70		53 m	β^+ 84%, EC 16%	-64.339	4(+)	
		71		61 h	EC 68%, β^+ 32%	-67.893	5/2-	
		72		26.0 h	β^+ 77%, EC 23%	-68.232	2-	
		73		80.3 d	EC	-70.949	3/2-	
		74		17.78 d	EC 37%, β^+ 31%, β^- 32%	-70.860	2-	
		75		100%		-73.034	3/2-	4.4
		76		26.3 h	β^-	-72.291	2-	
		77		38.8 h	β^-	-73.916	3/2-	
		78		91 m	β^-	-72.74	(2-)	
		79		9.0 m	β^-	-73.71	3/2-	
		80		16 s	β^-	-72.06	1(+)	
		81		33 s	β^-	-72.64	(3/2)-	
		82		14 s	β^-		(5-)	
		82		19 s	β^-	-70.39	(1+)	
		83		13 s	β^-	-69.87		
		84		0.6 s	β^-	-66.16 s		
		84		5.3 s	β^-, β^-n 0.1%	-66.16 s	(1-)	
		85		2.03 s	β^-, β^-n 23%	-63.52 s		
		86		0.9 s	β^-, β^-n \approx 4%	-59.7 s		
		87		0.6 s	β^-	\approx 56.2 s		
34	Se	68		1.6 m	β^+	-54.17 s	0+	
		69		27.4 s	β^+, β^+p 0.07%	-56.30		
		70		41.1 m	$\beta^+ + \text{EC}$	-61.74 s	0+	
		70m		4 m?	$\beta^+ + \text{EC}$			
		71		4.9 m	$\beta^+ + \text{EC}$	-63.46	(5/2)-	
		72		8.4 d	EC	-67.894	0+	
		73		7.1 h	$\beta^+ \approx$ 65%, EC \approx 35%	-68.209	1/2+	
		73m		41 m	IT 73%, (β^+, EC) 27%	-68.183	1/2-	
		74		0.87%		-72.213	0+	52
		75		118.5 d	EC	-72.169	5/2+	
		76		9.0%		-75.259	0+	64 _g 21 _m ^{rs}
		77		7.6%		-74.606	1/2-	42 ^{rs}
		77m		17.4 s	IT	-74.444	7/2+	
		78		23.5%		-77.032	0+	0.4 _{g+m} 0.3 _m ^{rs}
		79		$\leq 6.5 \times 10^4$ y	β^- , no γ	-75.911	7/2+	
		79m		3.90 m	IT	-75.815	1/2-	
		80		49.8%		-77.761	0+	0.6 _g 0.07 _m
		81		18.5 m	β^-	-76.391	(1/2)-	
		81m		57.3 m	IT 99+%, β^- 0.058%	-76.288	(7/2)+	
		82		9.2%		-77.586	0+	0.04 _m 0.006 _g
				1.4×10^{20} y	$\beta^- \beta^-$			
		83		22.5 m	β^-	-75.333	(9/2)+	
		83m		70 s	β^-	-75.105	(1/2)-	
		84		3.3 m	β^-	-75.942	0+	
		85		31 s	β^-	-72.57 s		
		85		19 s?	β^-			
		86		16 s	β^-	-70.86 s	0+	
		87		5.8 s	β^-, β^-n 0.16%	\approx 66.2 s		
		88		1.5 s	β^-, β^-n 0.8%	-64.09 s	0+	
		89		0.41 s	[β^-], β^-n 5%	-59.89 s		
		91		0.27 s	$\beta^-, \beta^-n \approx$ 21%			
35	Br	70		23 s?	β^+p	-51.29 s		
		71		<1 m?	$\beta^+ + \text{EC}$	-56.86 s		
		72		1.31 m	β^+	-58.93 s	(3)	
		73		3.4 m	$\beta^+ + \text{EC}$	-63.67	(3/2-)	
		74		25.3 m	$\beta^+ + \text{EC}$	-65.295	(0, 1-)	
		74		4 m?	β^+			
		74m		41 m	$\beta^+ + \text{EC}$	\approx 65.1	(4-)	
		75		98 m	β^+ 76%, EC 24%	-69.159	(3/2-)	
		76		16.1 h	β^+ 57%, EC 43%	-70.303	1-	

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
35	Br	77	57.0 h	EC 99.26%, β^+ 0.74%	-73.242	3/2-	
		77m	4.3 m	IT	-73.136	9/2+	
		78	6.46 m	β^+ 92%, EC 8%, $\beta^- \leq 0.01\%$	-73.458	1+	
		79	50.69%		-76.070	3/2-	10.8 g
		79m	4.9 s	IT	-75.863	9/2+	2.4 m
		80	17.6 m	β^- 91.7%, EC 5.7%, β^+ 2.6%	-75.891	1+	
		80m	4.42 h	IT	-75.805	5-	
		81	49.31%		-77.976	3/2-	2.7 g+m
		82	35.34 h	β^-	-77.498	5-	
		82m	6.1 m	IT 97.6%, β^- 2.4%	-77.452	2-	
		83	2.39 h	β^-	-79.025	(3/2)-	
		84	31.8 m	β^-	-77.759	2-	
		84m	6.0 m	β^-	-77.46	(6-)	
		85	2.9 m	β^-	-78.67	3/2-	
		86	56 s	β^-	-75.96	(2-)	
		86	4.5 s?	[IT]			
		87	55.6 s	$\beta^-, \beta^- n$ 2.3%	-74.21 s	(3/2-)	
		88	16.6 s	$\beta^-, \beta^- n$ 6%	-71.09 s	(1-)	
		89	4.4 s	$\beta^-, \beta^- n$ 13%	-69.09 s		
		90	1.9 s	$\beta^-, \beta^- n$ 23%	-65.2 s		
		91	0.54 s	$\beta^-, \beta^- n$ 9%			
		92	0.36 s	$\beta^-, \beta^- n$ 16%	-57.8 s		
36	Kr	72	17 s	β^+ +EC	-53.87 s	0+	
		73	27 s	$\beta^+, \beta^+ p$ 0.7%	-56.98		
		74	11.5 m	β^+, EC	-62.02	0+	
		75	4.3 m	β^+, EC	-64.16 s		
		76	14.8 h	EC	-69.10	0+	
		77	75 m	$\beta^+ \approx 80\%, \text{EC} \approx 20\%$	-70.236	(5/2+)	
		78	0.356%		-74.150	0+	5 g
		79	35.0 h	EC 93%, β^+ 7%	-74.439	1/2-	0.21 m
		79m	50 s	IT	-74.309	7/2+	
		80	2.27%		-77.897	0+	12 g
		81	2.1×10 ⁵ y	EC	-77.654	7/2+	5 m
		81m	13 s	IT	-77.464	1/2-	
		82	11.6%		-80.591	0+	23 g
		83	11.5%		-79.985	9/2+	20 m
		83m	1.83 h	IT	-79.943	1/2-	200
		84	57.0%		-82.432	0+	0.09 m
		85	10.7 y	β^-	-81.472	9/2+	0.042 g
		85m	4.48 h	β^- 79%, IT 21%	-81.167	1/2-	1.7
		86	17.3%		-83.263	0+	0.06 r
		87	76 m	β^-	-80.707	(5/2)+	
		88	2.84 h	β^-	-79.689	0+	
		89	3.18 m	β^-	-76.79		
		90	32.3 s	β^-	-75.18	0+	
		91	8.6 s	β^-	-71.77		
		92	1.84 s	$\beta^-, \beta^- n$ 0.032%	-69.15	0+	
		93	1.29 s	$\beta^-, \beta^- n$ 1.9%	-65.6		
		94	0.20 s	$\beta^-, \beta^- n$ 6%	-61.32 s	0+	
		95	0.78 s	[β^-]			
37	Rb	74	65 ms	$\beta^+, \text{no } \gamma$	-51.43 s	(0+)	
		75	18 s	β^+	-57.51		
		76	39 s	β^+	-60.61		
		77	3.9 m	β^+, EC	-65.11	(5/2-)	
		78	18 m	β^+, EC	-68.8		
		78m	6 m	$\beta^+, \text{EC}, \text{IT}$	-68.7		
		79	23.0 m	$\beta^+ \text{ } 84\%, \text{EC } 16\%$	-70.86	(3/2, 5/2-)	
		80	34 s	β^+	-72.190	1+	
		81	4.58 h	EC 73%, β^+ 27%	-75.392	3/2-	
		81m	32 m	$\beta^+, \text{EC}, \text{IT}$	-75.307	9/2+	

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(b)$
37	Rb	82	1.25 m	β^+ 96%, EC 4%	-76.213	1+	
		82m	6.2 h	EC 74%, β^+ 26%	-76.1	5-	
		83	86.2 d	EC	-78.914	5/2-	
		84	32.9 d	EC 75%, β^+ 22%, β^- 3.0%	-79.752	2-	12 ^{rs} _{np}
		84m	20.5 m	IT	-79.288	(6+)	
		85	72.17%		-82.159	5/2-	0.40 _g 0.047 _m
		86	18.8 d	β^- 99+%, EC 0.005%	-82.738	2-	
		86m	1.02 m	IT	-82.182	6-	
		87	27.83% 4.8x10 ¹⁰ y	β^- , no γ	-84.596	3/2-	0.12 ^{rs}
		88	17.8 m	β^-	-82.602	2-	1.0 ^{rs}
		89	15.2 m	β^-	-81.717	(3/2-)	
		90	153 s	β^-	-79.57	(1-)	
		90m	258 s	β^- , IT	-79.46	(4-)	
		91	58 s	β^-	-77.97		
		92	4.52 s	β^- , β^-n 0.012%	-75.12	(1-)	
		93	5.85 s	β^- , β^-n 1.3%	-72.92		
		94	2.72 s	β^- , β^-n 10%	-68.82		
		95	0.38 s	β^- , β^-n 8.4%	-66.55		
		96	0.201 s	β^- , β^-n 13%	-62.77 s		
		97	0.170 s	β^- , β^-n 27%			
		98	0.13 s	β^- , β^-n 13%			
		99	76 ms	[β^-]			
38	Sr	77	9 s	β^+ , β^+p $\leq 0.25\%$	-57.96		
		78	31 m	β^+ +EC	-65.5 s	0+	
		79	8.1 m	β^+ +EC	-65.46 s		
		79	4 m?	β^+ +EC			
		80	106 m	EC+ β^+	-70.39 s	0+	
		81	26 m	$\beta^+ \approx 87\%$, EC $\approx 13\%$	-71.40	(1/2-)	
		82	25.0 d	EC, no γ	-75.999	0+	
		83	32.4 h	EC 76%, β^+ 24%	-76.664	7/2+	
		83m	5.0 s	IT	-76.405	1/2-	
		84	0.56%		-80.641	0+	0.6 ^{sc} _m 0.3 _g
		85	64.8 d	EC	-81.095	9/2+	
		85m	68 m	IT 87%, EC 13%	-80.856	1/2-	
		86	9.8%		-84.512	0+	0.84 ^{sc} _m
		87	7.0%		-84.869	9/2+	
		87m	2.80 h	IT 99.7%, EC 0.3%	-84.480	1/2-	
		88	82.6%		-87.911	0+	0.0057 ^{rs}
		89	50.5 d	β^-	-86.203	5/2+	0.42 ^{rs}
		90	28.8 y	β^- , no γ	-85.935	0+	0.8 ^{rs}
		91	9.5 h	β^-	-83.666	5/2+	
		92	2.71 h	β^-	-82.892	0+	
		93	7.4 m	β^-	-80.28		
		94	75 s	β^-	-78.96	0+	
		95	24.4 s	β^-	-75.14		
		96	1.1 s	β^-	-73.07	0+	
		97	0.40 s	β^-	-69.08 s		
		98	0.7 s	β^-	-67.38 s	0+	
		99	0.6 s	β^- , β^-n 3%			
39	Y	81	5 m	β^+ +EC			
		82	12 m?	[β^+]	-67.91 s		
		83	7.1 m	$\beta^+ \approx 95\%$, EC $\approx 5\%$	-72.36 s	(9/2+)	
		83	2.85 m	β^+ +EC	-72.36 s	(1/2)-	
		84	39 m	β^+ +EC	-73.692		
		84	4.6 s	β^+ +EC		(1+)	
		85(g)	2.7 h	β^+ 55%, EC 45%	-77.855	(1/2)-	
		85(m)	4.9 h	β^+ 70%, EC 30%	-77.835	(9/2)+	
		86	14.74 h	EC 66%, β^+ 34%	-79.239	4-	
		86m	48 m	IT 99.31%, β^+ +EC 0.69%	-79.021	8+	
		87	80.3 h	EC 99.8%, β^+ 0.2%	-83.007	1/2-	
		87m	13 h	IT 98%, EC $\approx 2\%$, β^+ 0.75%	-82.626	9/2+	

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
39	Y	88	106.6 d	EC 99+%, β^+ 0.210%	-84.298	4-	
		89	100%		-87.695	1/2-	1.2 _g 0.0010 _m
		89m	16.1 s	IT	-86.786	9/2+	
		90	64.1 h	β^-	-86.481	2-	<6.5 _g ^{rs}
		90m	3.19 h	IT 99+%, β^- 0.0021%	-85.799	7+	
		91	58.5 d	β^-	-86.350	1/2-	1.4 ^{rs}
		91m	49.7 m	IT	-85.794	9/2+	
		92	3.54 h	β^-	-84.822	2-	
		93	10.2 h	β^-	-84.227	1/2-	
		93m	0.82 s	IT	-83.468	9/2+	
		94	18.7 m	β^-	-82.382	2-	
		95	10.3 m	β^-	-81.233	(1/2)-	
		96	9.8 s	β^-			
		96	6.0 s	β^-	-78.43	(0-)	
		97(g)	3.7 s	β^-	-76.28	(1/2-)	
		97(m)	1.21 s	β^- \geq 99.3%, IT(?) \leq 0.7%	-75.61	(9/2)+	
		98	0.6 s	β^-	-73.19 s	(1+)	
		98	2.0 s	β^-	-73.19 s		
		99	1.4 s	β^- , β^-n 1%	-71.50		
		100	0.8 s	β^-	-67.96 s		
		102	0.9 s?	[β^-]	-63.36 s		
40	Zr	81	\approx 11 m	[β^+]			
		82	10 m	[β^+ +EC]		0+	
		83	\approx 8 m	[β^+]	\approx 65.4 s		
		83	0.7 m	β^+	\approx 65.4 s		
		84	5 m	EC+ β^+	-71.44 s	0+	
		85	7.9 m	β^+ +EC	-73.16 s		
		85	1.4 h?	[β^+ +EC]			
		85m	10.9 s	IT, β^+ +EC	-72.87 s		
		86	16.5 h	EC	-77.94 s	0+	
		87	1.6 h	β^+ , EC	-79.43	(9/2+)	
		87m	14 s	IT	-79.09	(1/2-)	
		88	83.4 d	EC	-83.621	0+	
		89	78.4 h	EC 77.7%, β^+ 22.3%	-84.860	9/2+	
		89m	4.18 m	IT 93.8%, EC 4.7%, β^+ 1.5%	-84.272	1/2-	
		90	51.5%		-88.765	0+	0.03 ^{rs}
		90m	809 ms	IT	-86.446	5-	
		91	11.2%		-87.892	5/2+	1.1 ^{rs}
		92	17.1%		-88.456	0+	0.2 ^{rs}
		93	1.5 \times 10 ⁶ y	β^-	-87.117	5/2+	1 ^{rs}
		94	17.4%		-87.264	0+	0.06
		95	64.0 d	β^-	-85.663	5/2+	
		96	2.80%		-85.445	0+	0.020
		97	16.9 h	β^-	-82.954	1/2+	
		98	31 s	β^- , no γ	-81.292	0+	
		99	2.1 s	β^-	-77.89	(1/2+)	
		100	7.1 s	β^-	-76.60	0+	
		101	2.0 s	β^-	-73.05 s		
		102	2.9 s	β^-	-72.36 s	0+	
41	Nb	86	1.4 m	β^+	-69.34 s		
		87	2.6 m	β^+ +EC	-74.43 s	(9/2+)	
		87	3.9 m	β^+ +EC	-74.43 s	(1/2-)	
		88	7.8 m	β^+ +EC	-76.42 s	(4-)	
		88	14.3 m	β^+ +EC	-76.42 s	(8+)	
		89	2.0 h	β^+ +EC	-80.621	(9/2+)	
		89	66 m	EC 74%, β^+ 26%	-80.621	(1/2)-	
		90	14.6 h	β^+ 53%, EC 47%	-82.654	8+	
		90m	18.8 s	IT	-82.529	4-	
		91	long	[EC]	-86.637	9/2+	
		91m	62 d	IT 96.6%, EC 3.4%	-86.532	1/2-	
		92	\approx 2 \times 10 ⁻¹¹ % 3.2 \times 10 ⁷ y	EC	-86.448	7+	
		92m	10.15 d	EC 99.94%, β^+ 0.06%	-86.313	2+	
		93	100%		-87.209	9/2+	1.1 _{g+m}
		93m	13.6 y	IT	-87.179	1/2-	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
41	Nb 94	2.0×10^4 y	β^-	-86.367	6+	$15 \frac{\text{sc}}{\text{g}}$ $0.59 \frac{\text{t}}{\text{m}}$
	94m	6.26 m	IT 99.5%, β^- 0.5%	-86.326	3+	
	95	35.0 d	β^-	-86.786	9/2+	$< 7 \text{ rs}$
	95m	87 h	IT 97.5%, β^- 2.5%	-86.552	1/2-	
	96	23.4 h	β^-	-85.608	(6)+	
	97	72 m	β^-	-85.612	9/2+	
	97m	1.0 m	IT	-84.868	1/2-	
	98	2.9 s	β^-	-83.530	1+	
	98m	51 m	β^-	-83.446	(5)+	
	99	15.0 s	β^-	-82.346	(9/2)+	
	99m	2.6 m	β^- , IT?(weak)	-81.981	(1/2)-	
	100	1.5 s	β^-	-79.96		
	100	3.1 s	β^-			
	101	7.0 s	β^-	-78.95		
	101	1.0 m?	β^-			
	102	4.3 s	β^-	-76.36 s		
	102	1.3 s	β^-	-76.36 s		
	103	1.5 s	β^-	-75.41 s		
	104	0.8 s	β^-	-72.65 s		
	104	4.8 s	β^-			
	105	2 s	[β^-]	- ≈ 70.14 s		
	106	≈ 1 s	β^-			
42	Mo 88	27 m?	β^+ +EC	-72.92 s		
	88	8 m	β^+ +EC	-72.92 s		
	90	5.67 h	EC 75%, β^+ 25%	-80.167	0+	
	91	15.49 m	β^+ 94.1%, EC 5.9%	-82.199	9/2+	
	91m	65 s	(β^+ , EC) 50%, IT 50%	-81.546	1/2-	
	92	14.8%		-86.807	0+	$0.3 \frac{\text{ts}}{\text{g}}$
	93	3×10^3 y	EC	-86.803	5/2+	
	93m	6.9 h	IT 99.88%, EC 0.12%	-84.378	21/2+	
	94	9.3%		-88.412	0+	
	95	15.9%		-87.712	5/2+	14 rs
	96	16.7%		-88.795	0+	1 rs
	97	9.6%		-87.544	5/2+	2 rs
	98	24.1%		-88.115	0+	0.13
	99	66.02 h	β^-	-85.970	1/2+	
	100	9.6%		-86.189	0+	0.20
	101	14.6 m	β^-	-83.516	1/2+	
	102	11.0 m	β^-	-83.562	0+	
	103	60 s	β^-	-80.61 s		
	104	1.0 m	β^-	-81.65 s	0+	
	105	36 s	β^-	-77.14 s		
	106	9.5 s	β^-	- ≈ 76.1 s	0+	
	107	≈ 5 s	β^-			
	108	1.1 s	β^-	- ≈ 70.9 s	0+	
43	Tc 90	50 s	β^+			
	90	7.9 s	β^+	-71.3	(1+)	
	91	3.14 m	β^+ +EC	-75.98	(9/2+)	
	91	3.3 m	β^+ +EC		(1/2)-	
	92	4.4 m	β^+ +EC	-78.936	(8)+	
	93	2.7 h	EC 87%, β^+ 13%	-83.610	9/2+	
	93m	43 m	IT 80%, EC 20%	-83.217	1/2-	
	94	293 m	EC 89%, β^+ 11%	-84.156	7+	
	94m	52 m	β^+ 72%, EC 28%	-84.081	(2)+	
	95	20.0 h	EC	-86.013	9/2+	
	95m	61 d	EC 95.8%, β^+ 0.31%, IT 3.9%	-85.974	1/2-	
	96	4.3 d	EC	-85.821	7+	
	96m	52 m	IT 98%, EC 2%, β^+ $\approx 0.01\%$	-85.787	4+	
	97	2.6×10^6 y	EC, no γ	-87.224	9/2+	
	97m	90 d	IT	-87.128	1/2-	
	98	4.2×10^6 y	β^-	-86.434	(6)+	$3 \frac{\text{ts}}{\text{g}}$
	99	2.14×10^5 y	β^-	-87.326	9/2+	19
	99m	6.02 h	IT 99+%, β^- $\geq 9 \times 10^{-5}\%$	-87.184	1/2-	
	100	15.8 s	β^-	-86.019	1+	

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
43	Tc	101	14.3 m	β^-	-86.327	9/2+	
		102	5.3 s	β^-	-84.60 s	1+	
		102m	4.4 m	$\beta^- \approx 98\%, \text{IT} \approx 2\%$	-84.3 s	(5)	
		103	50 s	β^-	-84.91		
		104	18.1 m	β^-	-83.85	(3)	
		105	7.6 m	β^-	-82.54		
		106	36 s	β^-	-80.03 s		
		107	21.2 s	β^-	-79.51 s		
		108	5.1 s	β^-	-75.8 s		
		109	1.4 s	β^-			
		110	0.82 s	β^-	-71 s		
44	Ru	92	3.7 m	$\beta^+ + \text{EC}$	-74.7 s	0+	
		93	60 s	$\beta^+ + \text{EC}$	-77.31 s	(9/2)+	
		93m	10.8 s	$\beta^+ + \text{EC} 79\%, \text{IT} 21\%$	-76.58 s	(1/2)-	
		94	52 m	EC	-82.571	0+	
		95	1.65 h	EC 85%, β^+ 15%	-83.452	5/2+	
		96	5.5%		-86.075	0+	0.25
		97	2.88 d	EC	-86.07	5/2+	
		98	1.86%		-88.226	0+	<8 ^{rs}
		99	12.7%		-87.620	5/2+	4
		100	12.6%		-89.222	0+	6
		101	17.0%		-87.952	5/2+	5
		102	31.6%		-89.100	0+	1.3
		103	39.4 d	β^-	-87.261	5/2+	
		104	18.7%		-88.099	0+	0.47
		105	4.44 h	β^-	-85.938	(3/2+)	0.30
		106	367 d	β^- , no γ	-86.333	0+	0.12
		107	4.2 m	β^-	-83.71		
		108	4.5 m	β^-	-83.82	0+	
		109	34 s	β^-	-80.81 s		
		109	13 s	β^-	-80.81 s		
		110	16 s	β^-	-80.3 s	0+	
		111	1.5 s	β^-			
		111	≈ 1 m?	$\{\beta^-\}$			
		112	0.7 s?	$\{\beta^-\}$		0+	
45	Rh	94	25 s	β^+			
		94	80 s	β^+			
		95	5.0 m	$\beta^+ + \text{EC}$	-78.34	(9/2)+	
		95m	1.96 m	IT 88%, $\beta^+ + \text{EC}$ 12%	-77.80	(1/2)-	
		96	9.9 m	$\beta^+ + \text{EC}$	-79.633	(5+)	
		96m	1.51 m	IT 60%, $\beta^+ + \text{EC}$ 40%	-79.581	(2+)	
		97	31 m	β^+, EC	-82.56	(9/2)+	
		97m	44 m	(β^+, EC) 95%, IT 5%	-82.30	(1/2)-	
		97	1 m?	?			
		98(g)	8.7 m	β^+, EC	-83.168	(2+)	
		98(m)	3.5 m	$\beta^+ + \text{EC}$	-83.162	(5+)	
		99	15.0 d	EC 97.4%, β^+ 2.6%	-85.517	(1/2-)	
		99m	4.7 h	EC $\approx 90\%$, β^+ $\approx 10\%$	-85.452	9/2+	
		100	20.8 h	EC 95%, β^+ 5%	-85.592	1-	
		100m	4.7 m	IT 93%, EC + β^+ 7%	-85.252	(5+)	
		101	3.3 y	EC	-87.410	1/2-	
		101m	4.34 d	EC 92.8%, IT 7.2%	-87.253	9/2+	
		102	2.9 y	EC		(6+)	
		102m	206 d	EC 62%, β^+ 14%, β^- 19%, IT 5%	-86.777	(2-)	
		103	100%		-88.024	1/2-	134 _g 11 _m
		103m	56.1 m	IT	-87.984	7/2+	
		104	42.3 s	β^- 99.6%, EC 0.4%	-86.952	1+	40 _{g+m}
		104m	4.34 m	IT 99.87%, β^- 0.13%	-86.823	5+	800 _{g+m}
		105	35.4 h	β^-	-87.855	(7/2)+	1.1 $\times 10^4$ _g 5 $\times 10^3$ _m
		105m	45 s	IT	-87.725	1/2-	
		106	29.8 s	β^-	-86.372	1+	
		106m	130 m	β^-	-86.235	4,5,6+	
		107	21.7 m	β^-	-86.86	(5/2)+	
		108	16.8 s	β^-	-85.02	1+	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
45	Rh	108	6.0 m	β^-	-85.09	
		109	80 s	β^-	-85.11 s	(5/2,3/2)+
		110	3 s	β^-	-82.8	
		110	28 s	β^-	-82.93	
		111	11 s	$[\beta^-]$	-82.53 s	
		112	4.6 s	β^-	-80.3 s	
		113	0.9 s	$[\beta^-]$		
		114	1.7 s?	β^-		
		97	3.3 m	$\beta^+ + \text{EC}$	-77.76 s	
		98	18 m	$\text{EC} + \beta^+$	-81.27 s	0+
		99	21.4 m	β^+, EC	-86.112	(5/2+)
		100	3.6 d	EC	-85.230	0+
		101	8.5 h	EC 93.6%, β^+ 6.4%	-85.428	(5/2)+
		102	1.0%		-87.925	0+
46	Pd	103	17.0 d	EC	-87.478	5/2+
		104	11.0%		-89.400	0+
		105	22.2%		-88.422	5/2+
		106	27.3%		-89.913	0+
		107	6.5×10 ⁶ y	$\beta^-, \text{no } \gamma$	-88.371	5/2+
		107m	21.3 s	IT	-88.156	11/2-
		108	26.7%		-89.523	0+
		109	13.43 h	β^-	-87.606	5/2+
		109m	4.69 m	IT	-87.417	11/2-
		110	11.8%		-88.335	0+
		111	22 m	β^-	-86.03	(5/2+)
		111m	5.5 h	IT 71%, β^- 29%	-85.86	(11/2-)
		112	21.1 h	β^-	-86.326	0+
		113	1.5 m	$\beta^-, \text{no } \gamma$	-83.64 s	
		114	2.4 m	$\beta^-, \text{no } \gamma$	-83.76 s	0+
		115	37 s	β^-		
		116	14 s	β^-	-80.12 s	0+
		117	5 s	$[\beta^-]$		
		118	3.1 s	β^-	-76.21 s	0+
		99	1.8 m?	$\beta^+ + \text{EC}$	-76.51 s	
		100	2.3 m	$\beta^+ + \text{EC}$	-77.93	
		100	8 m?	$\beta^+ + \text{EC}$		
		101	10.8 m	$\beta^+ + \text{EC}$	-81.33 s	(9/2+)
		102	13.0 m	$\beta^+ \approx 68\%, \text{EC} \approx 32\%$	-82.33	5+
		102m	7.7 m	(β^+, EC) 51%, IT 49%	-82.32	2+
		103	1.10 h	EC $\approx 58\%, \beta^+ \approx 42\%$	-84.80	7/2+
		103m	5.7 s	IT	-84.67	(1/2)-
		104	69 m	β^+, EC	-85.150	5+
		104m	33 m	(β^+, EC) 67%, IT 33%		2+
		105	41.3 d	EC 99+%, $\beta^+ 9 \times 10^{-4}\%$	-87.075	1/2-
		105m	7.2 m	IT 99.7%, EC 0.3%	-87.049	(7/2)+
		106	24.0 m	(EC, β^+) $\approx 99\%$, $\beta^- ? \leq 1\%$	-86.929	1+
		106m	8.5 d	EC	-86.841	6+
47	Ag	107	51.83%		-88.404	1/2-
		107m	44.3 s	IT	-88.311	7/2+
		108	2.4 m	β^- 97.7%, EC 2.1%, β^+ 0.24%	-87.602	1+
		108m	127 y	EC + β^+ 91%, IT 9%	-87.492	6+
		109	48.17%		-88.722	1/2-
		109m	39.8 s	IT	-88.634	7/2+
		110	24.4 s	β^- 99.7%, EC 0.3%	-87.456	1+
		110m	252 d	β^- 98.5%, IT 1.5%	-87.338	6+
		111	7.45 d	β^-	-88.226	1/2-
		111m	65 s	IT 99.7%, β^- 0.3%	-88.166	(7/2+)
		112	3.14 h	β^-	-86.620	2(-)
						37 _g
						0.3 _m ^{sc}
						88 _g
						4 _m
						80 _{g+m}
						3 ^{rs}

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
47	Ag	113	1.15 m	β^-	-86.82		
		113	5.37 h	β^-	-87.040	1/2(-)	
		114	4.5 s	β^-	-85.16	1+	
		115	18 s	β^-			
		115	20 m	β^-	-84.91	(1/2-)	
		116	2.68 m	β^-	-82.62 s		
		116m	10.5 s	$\beta^- \approx 98\%, \text{IT} \approx 2\%$	-82.54 s		
		117	1.21 m	β^-	-82.24		
		117	5.3 s	β^-	-82.24		
		118	3.7 s	β^-	-80.21 s		
		118m	2.8 s	$\beta^- 59\%, \text{IT} 41\%$	-80.08 s		
		119	2.1 s	β^-	-79.31 s	(7/2+)	
		120	1.2 s	β^-	-78.0 s	(3+)	
		120m	0.32 s	$\beta^- \approx 63\%, \text{IT} \approx 37\%$	-77.8 s	(6-)	
		121	53 s	$[\beta^-]$			
		122	1.5 s	$[\beta^-]$	-70.5 s		
		123	0.39 s	$[\beta^-], \beta^- n$			
48	Cd	100	1.1 m	$\beta^+ + \text{EC}$	-73.43 s	0+	
		101	1.2 m	$\beta^+ + \text{EC}$	-75.53 s		
		102	5.5 m	EC, β^+	-79.43 s	0+	
		103	7.3 m	β^+, EC	-80.60		
		104	58 m	$\text{EC} 99.2\%, \beta^+ 0.8\%$	-83.57	0+	
		105	56.0 m	EC, β^+	-84.336	5/2+	
		106	1.25%		-87.131	0+	1 ^{rs}
		107	6.50 h	$\text{EC} 99.77\%, \beta^+ 0.23\%$	-86.987	5/2+	
		108	0.89%		-89.251	0+	1.2 ^{rs}
		109	453 d	EC	-88.540	5/2+	700 ^{rs}
		110	12.5%		-90.349	0+	11 ^{rs} ₉ 0.10 ^{rs} _m
		111	12.8%		-89.254	1/2+	24 ^{rs}
		111m	48.6 m	IT	-88.858	11/2-	
		112	24.1%		-90.578	0+	2 ^{rs} ₉
		113	12.2% 9×10 ¹⁵ y	β^- , no γ	-89.050	1/2+	1.98×10 ⁴
		113m	14 y	$\beta^- 99.9\%, \text{IT} 0.1\%$	-88.787	11/2-	
		114	28.7%		-90.020	0+	0.30 ^{sc} _g 0.04 ^{sc} _m
		115	53.4 h	β^-	-88.093	1/2+	
		115m	44.8 d	β^-	-87.920	11/2-	
		116	7.5%		-88.718	0+	0.05 ^{sc} _g 0.025 ^{sc} _m
		117	2.4 h	β^-	-86.416	1/2+	
		117m	3.4 h	β^-	-86.29	11/2-	
		118	50.3 m	β^- , no γ	-86.707	0+	
		119	2.7 m	β^-	-84.23	1/2+	
		119m	1.9 m	β^-	-84.08	11/2-	
		120	50.8 s	β^-	-83.98*	0+	
		121	12.8 s	β^-	-83.13 s		
		121	4.8 s	β^-	-83.13 s		
		122	5.8 s	β^-	-80.0 s	0+	
		124	0.9 s	β^-	-76.4 s	0+	
49	In	104	1.5 m	$\beta^+ + \text{EC}$	-75.57 s		
		105	5.1 m	$\beta^+ + \text{EC}$	-79.34 s		
		105m	55 s?	$\text{IT}?$			
		106	5.3 m	$\beta^+ + \text{EC}$	-80.586	(3)	
		106	6.3 m	$\beta^+ + \text{EC}$			
		107	32.4 m	$\text{EC} 65\%, \beta^+ 35\%$	-83.50	9/2+	
		107m	50 s	IT	-82.82	1/2-	
		108	40 m	EC, β^+	-84.10	3+	
		108	58 m	EC, β^+	-84.13	(5,6+)	
		109	4.2 h	$\text{EC} 94\%, \beta^+ 6\%$	-86.524	9/2+	
		109m ₁	1.3 m	IT	-85.874	1/2-	
		109m ₂	0.21 s	IT	-84.41	(19/2+)	
		110	4.9 h	EC		7+	
		110	69 m	β^+, EC	-86.409	2+	
		111	2.83 d	EC	-88.405	9/2+	

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
49	In	111m	7.6 m	IT	-87.869	1/2-	
		112	14.4 m	β^- 44%, EC 34%, β^+ 22%	-88.000	1+	
		112m	20.9 m	IT	-87.845	4+	
		113	4.3%		-89.372	9/2+	5 _m 3 _g
		113m	99.5 m	IT	-88.980	1/2-	
		114	71.9 s	β^- 98.1%, EC 1.9%, β^+ 0.004%	-88.576	1+	
		114m	49.51 d	IT 96.7%, EC 3.3%	-88.386	5+	
		115	95.7% 5.1×10 ¹⁴ y	β^- , no γ	-89.541	9/2+	91 _{m2} 70 _{m1} 41 _g
		115m	4.49 h	IT 95%, β^- 5%	-89.205	1/2-	
		116	14.10 s	β^-	-88.253	1+	
		116m ₁	54.1 m	β^-	-88.126	5+	
		116m ₂	2.16 s	IT	-87.963	8-	
		117	42 m	β^-	-88.944	9/2+	
		117m	1.93 h	β^- 53%, IT 47%	-88.629	1/2-	
		118	5.0 s	β^-	-87.45	1+	
		118	4.4 m	β^-	-87.37	(5)+	
		118	8.5 s	IT 98.5%, β^- 1.5%	-87.23	(8)-	
		119	2.1 m	β^-	-87.730	9/2+	
		119m	18.0 m	β^- 95%, IT 5%	-87.419	1/2-	
		120	44 s	β^-	-85.8	(5)+	
		120	3.0 s	β^-	-85.5	1+	
		121	30.0 s	β^-	-85.842	9/2+	
		121m	3.8 m	β^- 98.8%, IT 1.2%	-85.528	1/2-	
		122	9.2 s	β^-	-83.4		
		122	1.5 s	β^-	-83.5	(1+)	
		123(g)	6.0 s	β^-	-83.44	(9/2+)	
		123(m)	48 s	β^-	-83.12	(1/2)-	
		124	2.4 s	β^-			
		124	3.2 s	β^-	-81.10	(2+)	
		125	2.32 s	β^-	-80.50	(9/2+)	
		125	12.2 s	β^-			
		126	1.53 s	β^-	-77.90		
		127	1.3 s	β^-	-77.36		
		127	3.7 s	β^- , β^-n	-77.36		
		128	12 s?	[β^-], β^-n			
		129	2.5 s	β^- , β^-n			
		129	0.99 s	β^- , β^-n	-73.12		
		130	0.58 s	β^- , β^-n	-70.08 s		
		131	0.29 s	β^- , β^-n	-69.8 s	(9/2+)	
		132	0.12 s	β^- , β^-n	-65 s		
50	Sn	106	1.9 m	EC+ β^+	-76.99 s	0+	
		107	2.90 m	β^+ +EC	-78.40 s		
		108	10.5 m	EC	-81.90 s	0+	
		109	18.0 m	β^+ , EC	-82.62 s	7/2+	
		109	1.5 m?	?			
		110	4.1 h	EC	-85.834	0+	
		111	35 m	EC 71%, β^+ 29%	-85.94	7/2+	
		112	1.01%		-88.658	0+	0.4 _g ^{cs} 0.3 _m ^{cs}
		113	115.1 d	EC	-88.332	1/2+	
		113m	21 m	IT 91%, EC 9%	-88.253	7/2+	
		114	0.67%		-90.560	0+	
		115	0.38%		-90.035	1/2+	50 ^{cs}
		116	14.8%		-91.526	0+	0.006 _m ^{cs} 3 ^{cs}
		117	7.75%		-90.399	1/2+	
		117m	14.0 d	IT	-90.084	11/2-	
		118	24.3%		-91.654	0+	0.08 _m ^{cs} 2
		119	8.6%		-90.067	1/2+	
		119m	≈250 d	IT	-89.977	11/2-	
		120	32.4%		-91.102	0+	0.16 _g 0.001 _m

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
50	Sn	121	27.1 h	β^- , no γ	-89.202	3/2+	
		121m	55 y	β^-	-89.196	(11/2)-	
		122	4.56%		-89.946	0+	0.15 m 0.001 g
		123	129 d	β^-	-87.821	11/2-	
		123m	40.1 m	β^-	-87.796	(3/2)+	
		124	5.64%		-88.240	0+	0.13 m 0.005 g
		125	9.62 d	β^-	-85.903	11/2-	
		125m	9.5 m	β^-	-85.876	3/2+	
		126	$\approx 1 \times 10^5$ y	β^-	-86.024	0+	
		127	2.1 h	β^-	-83.79	(11/2)-	
		127m	4.1 m	β^-	-83.78	(3/2)+	
		128	59.3 m	β^-	-83.44	0+	
		129	2.2 m	β^-	-80.64	(3/2)+	
		129m	7.5 m	β^-	-80.60	(11/2)-	
		130	3.7 m	β^-	-80.38	0+	
		130m	1.7 m	β^-		(7-)	
		131	63 s	β^-	-77.48 s	(3/2)+	
		132	40 s	β^-	-76.60	0+	
		133	1.47 s	β^- , β^-n	-71.5		
		134	1.04 s	β^- , $\beta^-n \approx 17\%$		0+	
51	Sb	108	7.0 s	β^+	-72.40 s	(3+)	
		109	18.3 s	β^+ +EC	-76.12 s		
		110	23 s	$\beta^+ \approx 92\%$, EC $\approx 8\%$	-76.75	(3)+	
		111	75 s	β^+ , EC	-81.47	(5/2)+	
		112	54 s	β^+ , EC	-81.63	(3+)	
		113	6.7 m	EC, β^+	-84.443	(5/2)+	
		114	3.5 m	β^+ , EC	-84.14	(3)+	
		114	8 m	?			
		115	31.8 m	EC 67%, β^+ 33%	-87.005	5/2+	
		116	16 m	EC 72%, β^+ 28%	-86.93	3+	
		116m	60.4 m	EC 81%, β^+ 19%	-86.32	8-	
		117	2.80 h	EC 97.5%, β^+ 2.5%	-88.654	5/2+	
		118	3.5 m	EC, β^+	-87.967	1+	
		118	0.87 s	?			
		118m	5.00 h	EC 99.84%, β^+ 0.16%	-87.747	8-	
		119	38.0 h	EC	-89.483	5/2+	
		120	15.8 m	EC 56%, β^+ 44%	-88.421	1+	
		120	5.76 d	EC		8-	
		121	57.3%		-89.588	5/2+	6.1 g 0.06 m
		122	2.68 d	β^- 97.0%, EC 3.0%, β^+ 0.0063%	-88.323	2-	
		122m	4.2 m	IT	-88.160	(8-)	
		123	42.7%		-89.218	7/2+	4.0 g 0.04 m
		124	60.20 d	β^-	-87.613	3-	7 s
		124m ₁	93 s	IT 80%, β^- 20%	-87.603	(5)+	
		124m ₂	20.2 m	IT	-87.578		
		125	2.7 y	β^-	-88.252	7/2+	
		126	12.4 d	β^-	-86.402	(8-)	
		126m	19.0 m	β^- 86%, IT 14%	-86.384	(5)+	
		127	3.9 d	β^-	-86.704	7/2+	
		128(g)	9.1 h	β^-	-84.75	8-	
		128(m)	10.0 m	β^- 96.4%, IT 3.6%	-84.73	5+	
		129	4.4 h	β^-	-84.630	7/2+	
		130	40 m	β^-	-82.38	(8-)	
		130	6.5 m	β^-		(4,5)+	
		131	23.03 m	β^-	-82.10 s	(7/2+)	
		132	2.8 m	β^-	-79.68	(4+)	
		132	4.2 m	β^-		(8-)	
		133	2.7 m	β^-	-78.98		
		134	10.4 s	β^- , β^-n 0.09%	-73.87 s		
		134	0.8 s	β^- , no γ	-73.87 s		
		135	1.70 s	β^- , β^-n 20%	-70.44 s	(7/2+)	
		136	0.82 s	β^- , β^-n 32%			
52	Te	107	2.1 s	α			

TABLE OF NUCLIDES

Nuclide			Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A					
52	Te	108	5.3 s	$\alpha, [\beta^+ + \text{EC}], (\beta^+ + \text{EC})p$	-65.32 s	0+	
		109	4.2 s	$[\beta^+ + \text{EC}], (\beta^+ + \text{EC})p, \alpha$	-67.47 s		
		111	19 s	$\beta^+ + \text{EC}, (\beta^+ + \text{EC})p$	-74.10 s		
		113	2.0 m	$\beta^+ + \text{EC}$	-78.96		
		114	17 m	$\text{EC} + \beta^+$	-81.46 s	0+	
		115	6.0 m	$\beta^+ \approx 75\%, \text{EC} \approx 25\%$	-82.58	$\{7/2+\}$	
		115	7.5 m	$\beta^+ + \text{EC}$		$\{1/2+\}$	
		116	2.50 h	EC, β^+	-85.37	0+	
		117	62 m	$\text{EC } 70\%, \beta^+ 30\%$	-85.164	1/2+	
		118	6.00 d	$\text{EC}, \text{no } \gamma$	-87.671	0+	
		119	16.05 h	$\text{EC } 97.2\%, \beta^+ 2.8\%$	-87.189	1/2+	
		119m	4.68 d	EC	-86.89	11/2-	
		120	0.091%		-89.404	0+	2.0^{rs}_g 0.3^{rs}_m
		121	16.8 d	EC	-88.486	1/2+	
		121m	154 d	$\text{IT } 90\%, \text{EC } 10\%,$ $\beta^+ 0.002\%$	-88.192	11/2-	
		122	2.5%		-90.304	0+	3^{rs}_{gm}
		123	0.89%		-89.166	1/2+	400^{rs}
		123m	119.7 d	IT	-88.918	11/2-	
		124	4.6%		-90.518	0+	7^{rs}_g 0.05^{rs}_m
		125	7.0%		-89.019	1/2+	1.6^{rs}
		125m	58 d	IT	-88.874	11/2-	
		126	18.7%		-90.066	0+	0.9^{rs}_g 0.13^{rs}_m
		127	9.4 h	β^-	-88.285	3/2+	
		127m	109 d	$\text{IT } 97.6\%, \beta^- 2.4\%$	-88.197	11/2-	
		128	37.7% 1.5×10^{24} y	$\beta^- \beta^-$	-88.992	0+	0.20_g 0.016_m
		129	69 m	β^-	-87.007	3/2+	
		129m	33.5 d	$\text{IT } 63\%, \beta^- 37\%$	-86.901	11/2-	
		130	34.5% 2×10^{21} y	$\beta^- \beta^-$	-87.348	0+	0.2^{rs}_g 0.03^{rs}_m
		131	25.0 m	β^-	-85.201	3/2+	
		131m	30 h	$\beta^- 78\%, \text{IT } 22\%$	-85.019	11/2-	
		132	78 h	β^-	-85.213	0+	
		133	12.4 m	β^-	-82.93	$\{3/2+\}$	
		133m	55.4 m	$\beta^- 83\%, \text{IT } 17\%$	-82.60	$\{11/2-\}$	
		134	42 m	β^-	-82.67 s	0+	
		135	19.2 s	β^-	-77.60		
		136	17.5 s	$\beta^-, \beta^- n 0.7\%$	-74.83 s	0+	
		137	4 s	$\beta^-, \beta^- n 2.5\%$			
		138	1.4 s	$\beta^-, \beta^- n 6\%$		0+	
53	I	115	1.3 m	$\beta^+ + \text{EC}$	-76.78 s		
		116	2.9 s	$\beta^+ + \text{EC}$	-77.61	1+	
		117	2.2 m	$\text{EC } 54\%, \beta^+ 46\%$	-80.85		
		118	14.3 m	$\beta^+ 54\%, \text{EC } 46\%$	-80.60	$\{2-\}$	
		118m	8.5 m	$\beta^+, \text{EC}, \text{IT}$	-80.50		
		119	19.3 m	$\beta^+ 51\%, \text{EC } 49\%$	-83.82		
		120	1.35 h	$\text{EC } 54\%, \beta^+ 46\%$	-83.789	2-	
		120m	53 m	β^+, EC	-82.86		
		121	2.12 h	$\text{EC } 94\%, \beta^+ 6\%$	-86.12	5/2+	
		122	3.6 m	$\beta^+ 77\%, \text{EC } 23\%$	-86.16	1+	
		123	13.0 h	EC	-87.97	5/2+	
		124	4.2 d	$\text{EC } 75\%, \beta^+ 25\%$	-87.361	2-	
		125	60.2 d	EC	-88.841	5/2+	900^{sc}
		126	13.0 d	$\text{EC } 53\%, \beta^+ 1.0\%,$ $\beta^- 46\%$	-87.911	2-	$6 \times 10^3^{rs}$
		127	100%		-88.980	5/2+	6.1
		128	24.99 m	$\beta^- 94\%, \text{EC } 6\%,$ $\beta^+ 0.003\%$	-87.734	1+	
		129	1.6×10^7 y	β^-	-88.505	7/2+	18^{rs}_m 9_g

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(b)$
53	I	130	12.36 h	β^-	-86.897	5+	18 ^{rs}
		130m	9.2 m	IT 83%, β^- 17%	-86.849	2+	
		131	8.040 d	β^-	-87.451	7/2+	0.7 _{g+m}
		132	2.28 h	β^-	-85.706	4+	
		132m	83 m	IT 86%, β^- 14%	-85.59	(8-)	
		133	20.9 h	β^-	-85.902	7/2+	
		133m	9 s	IT	-84.268	(19/2-)	
		134	52.6 m	β^-	-83.97	(4)+	
		134m	3.5 m	IT 98%, β^- 2%	-83.65	(8-)	
		135	6.61 h	β^-	-83.796	7/2+	
		136	46 s	β^-		(5,6-)	
		136	83 s	β^-	-79.43	(2-)	
		137	24.5 s	β^- , β^-n 6%	-76.72		
		138	6.5 s	β^- , β^-n 5%	-71.85 s	(2,3-)	
		139	2.3 s	β^- , β^-n 10%	-68.8 s		
		140	0.8 s	β^- , β^-n 14%			
		141	0.5 s	[β^-], β^-n \approx 60%			
54	Xe	113	2.8 s	{ β^+ +EC}, (β^+ +EC)p	-71.86 s		
		115	18 s	β^+ , EC, (β^+ +EC)p 0.3%	-68.87 s		
		116	57 s	β^+ +EC	-73.27	0+	
		117	61 s	EC 65%, β^+ 35%, (EC+ β^+)p 0.003%	-74.48 s		
		118	6 m	EC 86%, β^+ 14%	-77.30 s	0+	
		119	6 m	EC 82%, β^+ 18%	-78.83	0+	
		120	40 m	EC 97%, β^+ 3%	-81.84	0+	
		121	39 m	EC 92%, β^+ 8%	-82.33		
		122	20.1 h	EC	-85.16 s	0+	
		123	2.08 h	EC 87%, β^+ 13%	-85.29	(1/2+)	
		124	0.096%		-87.45	0+	100 _g 20 _m
		125	17 h	EC 99.7%, β^+ 0.3%	-87.11	(1/2)+	
		125m	57 s	IT	-86.86	(9/2)-	
		126	0.090%		-89.162	0+	3 _g 0.4 _m
		127	36.41 d	EC	-88.316	(1/2+)	
		127m	69 s	IT	-88.019	(9/2-)	
		128	1.92%		-89.861	0+	0.4 _m <8 _o ^{rs}
		129	26.4%		-88.698	1/2+	20 ^{rs}
		129m	8.89 d	IT	-88.461	11/2-	
		130	4.1%		-89.881	0+	0.4 _m <26 _o
		131	21.2%		-88.421	3/2+	90 ^{rs}
		131m	11.77 d	IT	-88.257	11/2-	
		132	26.9%		-89.286	0+	0.4 _g 0.03 _m
		133	5.25 d	β^-	-87.662	3/2+	190 ^{rs} _g
		133m	2.19 d	IT	-87.429	11/2-	
		134	10.4%		-88.125	0+	0.25 _g 0.003 _m
		134m	0.29 s	IT	-86.160	(7-)	
		135	9.10 h	β^-	-86.506	3/2+	2.6 \times 10 ⁶
		135m	15.6 m	IT 99+%, β^- 0.004%	-85.979	11/2-	
		136	8.9%		-86.425	0+	0.16
		137	3.82 m	β^-	-82.215	(7/2)-	
		138	14.1 m	β^-	-80.15	0+	
		139	39.7 s	β^-	-75.75	(7/2-)	
		140	14 s	β^-	-73.18	0+	
		141	1.73 s	β^- , β^-n 0.05%	-69.00		
		142	1.2 s	β^- , β^-n 0.41%	-66.05	0+	
		143	0.30 s	β^-			
		143	0.96 s	β^-			
		144	1.2 s	β^-		0+	
		145	0.9 s	β^-			
55	Cs	116	3.9 s	β^+ +EC, (β^+ +EC)p 0.3%	-62.63 s		

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
55	Cs 117	8 s	$\beta^+ + \text{EC}$	-66.85 s		
	118	16 s	$\beta^+ + \text{EC}$, ($\beta^+ + \text{EC}$)p 0.04%, ($\beta^+ + \text{EC}$) α 0.0024%	-67.89 s		
	119	38 s	$\beta^+ + \text{EC}$	-72.53 s		
	120	60 s	$\beta^+ + \text{EC}$, ($\beta^+ + \text{EC}$) α $2.0 \times 10^{-5}\%$, ($\beta^+ + \text{EC}$)p $7 \times 10^{-6}\%$	-73.4		
	121	126 s	β^+, EC	-77.13 s		
	122	4.5 m	$\beta^+ + \text{EC}$			
	122	21 s	$\beta^+ + \text{EC}$	-78.01 s	(2,3+)	
	122	0.4 s	?			
	123	5.9 m	β^+, EC	-81.19	(1/2+)	
	123m	1.6 s	IT			
	124	31 s	$\beta^+ \approx 92\%, \text{EC} \approx 8\%$	-81.53	(1+)	
	125	45 m	EC 61%, β^+ 39%	-84.04	1/2+	
	126	1.64 m	$\beta^+ 82\%, \text{EC} 18\%$	-84.33	1+	
	127	6.2 h	EC 96.5%, β^+ 3.5%	-86.226	1/2+	
	128	3.6 m	$\beta^+ 61\%, \text{EC} 39\%$	-85.935	1+	
	129	32.3 h	EC 99+%, β^+ 0.0030%	-87.493	1/2+	
	130	29.9 m	(EC, β^+) 98.4%, $\beta^- 1.6\%$	-86.863	1+	
	131	9.688 d	EC, no γ	-88.066	5/2+	
	132	6.47 d	EC 96.5%, β^+ 1.5%, $\beta^- 2.0\%$	-87.175	2(-)	
	133	100%		-88.089	7/2+	27 g 2.5 m
	134	2.062 y	$\beta^- 99+%, \text{EC} 3 \times 10^{-4}\%$	-86.909	4+	$140 \text{ g}^{\text{rs}}$
	134m	2.90 h	IT	-86.770	8-	
	135	3×10^6 y	$\beta^-, \text{no } \gamma$	-87.665	7/2+	g^{sc}
	135m	53 m	IT	-86.038	(19/2-)	
	136	13.1 d	β^-	-86.358	5+	
	136m	19 s	IT			
	137	30.17 y	β^-	-86.560	7/2+	$0.11 \text{ g}^{\text{rs}}$ g^{sm}
	138	32.2 m	β^-	-82.98	3-	
	138m	2.9 m	IT 75%, $\beta^- 25\%$	-82.90	(6-)	
	139	9.5 m	β^-	-80.63	(7/2+)	
	140	65 s	β^-	-77.24	1,2-	
	141	24.9 s	$\beta^-, \beta^-, n 0.05\%$	-75.00		
	142	1.69 s	$\beta^-, \beta^-, n 0.28\%$	-70.95		
	143	1.78 s	$\beta^-, \beta^-, n 1.7\%$	-68.36 s		
	144	1.00 s	$\beta^-, \beta^-, n 3.0\%$	-63.93 s		
	145	0.58 s	$\beta^-, \beta^-, n 12\%$	-61.72 s		
	146	0.34 s	$\beta^-, \beta^-, n 14\%$			
56	Ba 117	1.9 s	[$\beta^+ + \text{EC}$], ($\beta^+ + \text{EC}$)p			
	119	5.3 s	($\beta^+ + \text{EC}$)p	-64.53 s		
	120	32 s	$\beta^+ + \text{EC}$	-68.8 s	0+	
	121	30 s	$\beta^+ + \text{EC}$, ($\beta^+ + \text{EC}$)p 0.02%	-70.55 s		
	122	2.0 m	$\beta^+ + \text{EC}$	-74.26 s	0+	
	122	≈ 4 s	[$\beta^+ + \text{EC}$]			
	123	2.7 m	$\beta^+ + \text{EC}$	-75.69 s		
	124	11 m	EC + β^+	-78.75 s	0+	
	125	3.5 m	β^+, EC	-79.53		
	125	8 m	$\beta^+ + \text{EC}$			
	126	100 m	EC + β^+	-82.56 s	0+	
	127	13 m	$\beta^+ \approx 51\%, \text{EC} \approx 49\%$	-82.78	(1/2+)	
	127	18 m	$\beta^+ + \text{EC}$			
	128	2.43 d	EC	-85.482	0+	
	129	2.2 h	EC, β^+	-85.046	1/2+	
	129m	2.1 h	EC + β^+	-84.769	(11/2)-	
	130	0.106%		-87.303	0+	8 g^{rs} $2.5 \text{ m}^{\text{rs}}$
	131	12.0 d	EC	-86.726	1/2+	
	131m	14.6 m	IT	-86.538	9/2-	

TABLE OF NUCLIDES

Z	El	A	Nuclide	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(b)$
56	Ba	132		0.101%		-88.453	0+	7_9^{rs} 0.6 $_m^{rs}$
		133		10.7 y	EC	-87.569	1/2+	
		133m		38.9 h	IT 99+%, EC 0.011%	-87.281	11/2-	
		134		2.42%		-88.968	0+	0.16 $_m^{rs}$ $\approx 2_0^{rs}$
		135		6.59%		-87.870	3/2+	6_9^{rs} 0.014 $_m^{rs}$
		135m		28.7 h	IT	-87.602	11/2-	
		136		7.85%		-88.906	0+	0.011 $_m^{rs}$ 0.4 $_0^{rs}$
		136m		0.31 s	IT	-86.876	7-	
		137		11.2%		-87.733	3/2+	5.1 rs
		137m		2.551 m	IT	-87.071	11/2-	
		138		71.7%		-88.273	0+	0.4 rs
		139		82.9 m	β^-	-84.925	(7/2)-	6^{rs}
		140		12.79 d	β^-	-83.285	0+	1.6
		141		18.2 m	β^-	-79.98		
		142		10.6 m	β^-	-77.82	0+	
		143		13.5 s	β^-	-74.01 s		
		144		11.9 s	β^-	-72.03 s	0+	
		145		5 s	β^-	-67.82 s		
		146		1.7 s	β^-	-65.56 s	0+	
		148		0.5 s	β^-		0+	
57	La	125		<1 m?	?			
		126		1.0 m	β^+ +EC			
		127		3.8 m	β^+ +EC	-77.78 s		
		128		4.6 m	β^+ +EC	-78.68 s		
		129		10 m	β^+ +EC	-81.05 s	(3/2+)	
		129m		0.56 s	IT	-80.88 s	(11/2-)	
		130		8.7 m	β^+ , EC	-81.60 s	(3+)	
		131		61 m	EC 76%, β^+ 24%	-83.77	3/2+	
		132		4.8 h	β^+ , EC	-83.74	2-	
		132m		24.3 m	IT 76%, EC+ β^+ 24%	-83.55	6-	
		133		3.91 h	EC, β^+	-85.57 s	5/2+	
		134		6.67 m	β^+ 62%, EC 38%	-85.268	1+	
		135		19.4 h	EC 99+%, β^+ 0.009%	-86.670	5/2+	
		136		9.87 m	EC 64%, β^+ 36%	-86.04	1+	
		137		6×10^4 y	EC, no γ	-87.13 s	7/2+	
		138		0.089% 1.1×10^{11} y	EC 68%, β^- 32%	-86.524	5+	57
		139		99.911%		-87.231	7/2+	9.2
		140		40.3 h	β^-	-84.320	3-	2.7 sc
		141		3.90 h	β^-	-83.008		
		142		93 m	β^-	-80.018	2-	
		143		14.0 m	β^-	-78.31		
		144		40 s	β^-	-74.93 s		
		145		30 s	β^-	-72.92 s		
		146		11 s	β^-	-69.46 s		
		148		1.3 s	β^-	-63.99 s		
58	Ce	128		≈ 6 m	[EC+ β^+]		0+	
		129		3.5 m	β^+ +EC			
		130		25 m	EC+ β^+		0+	
		131		5 m	EC+ β^+	-79.47 s		
		131		10 m	EC 89%, β^+ 11%	-79.47 s		
		132		3.5 h	EC	-82.34 s	0+	
		133		97 m	EC+ β^+	-82.17 s	1/2(+)	
		133		5.4 h	EC, β^+	-82.17 s	9/2-	
		134		76 h	EC	-84.77 s	0+	
		135		17.8 h	EC 99%, β^+ 1%	-84.55	1/2(+)	
		135m		20 s	IT	-84.10	(11/2-)	
		136		0.190%		-86.50	0+	6_9^{rs} 1.0 $_m^{rs}$
		137		9.0 h	EC 99+%, β^+ 0.014%	-85.91 s	3/2+	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
58	Ce 137m	34.4 h	IT 99.2%, EC 0.8%	-85.66 s	11/2-	
	138	0.254%		-87.565	0+	1.0 ^{rs} 0.015 ^{rs} _m
	139	137.2 d	EC	-86.966	3/2+	
	139m	56 s	IT	-86.212	11/2-	
	140	88.5%		-88.081	0+	0.56 ^{rs}
	141	32.5 d	β^-	-85.438	7/2-	29 ^{rs}
	142	11.1%		-84.535	0+	0.95
	143	33.0 h	β^-	-81.610	3/2-	6 ^{rs}
	144	284 d	β^-	-80.431	0+	1.0
	145	3.0 m	β^-	-77.12		
	146	14 m	β^-	-75.76	0+	
	147	56 s	β^-	-72.24 s		
	148	48 s	β^-	-70.81 s	0+	
	149	5.0 s	β^-	-67.47 s		
	150	4 s	β^-	-65.3 s	0+	
	151	1.0 s	β^-	-62.68 s		
59	Pr 121	1 s	$[\beta^+ + \text{EC}], (\beta^+ + \text{EC})p$			
	129	24 s	$\beta^+ + \text{EC}$			
	130	28 s	β^+, EC			
	132	1.6 m	$\beta^+ + \text{EC}$	-75.34 s		
	133	6.5 m	β^+, EC	-77.97 s	5/2(+)	
	134	17 m	$\beta^+ + \text{EC}$	-78.47 s	2+	
	134	≈ 11 m	$\beta^+ + \text{EC}$	-78.47 s		
	135	25 m	EC $\approx 75\%$, $\beta^+ \approx 25\%$	-80.99	3/2(+)	
	136	13.1 m	β^+, EC	-81.40	2+	
	137	1.28 h	EC 75%, β^+ 25%	-83.21 s	5/2+	
	138	1.4 m	β^+, EC	-83.128	1+	
	138m	2.1 h	EC 77%, β^+ 23%	-82.765	7-	
	139	4.4 h	EC 92%, β^+ 8%	-84.854	5/2+	
	139	≈ 6 m?	?			
	140	3.39 m	EC 51%, β^+ 49%	-84.693	1+	
	141	100%		-86.018	5/2+	8 ^g 3.9 ^g _m
	142	19.2 h	β^- 99+%, EC 0.016%	-83.790	2-	20 ^{rs}
	142m	14.6 m	IT	-83.786	5-	
	142	1.6 m?	?			
	143	13.58 d	β^-	-83.065	7/2+	90 ^{g+m}
	144	17.3 m	β^-	-80.750	0-	
	144m	7.2 m	IT 99.96%, β^- 0.04%	-80.691	3-	
	145	5.98 h	β^-	-79.625	(7/2+)	
	146	24.0 m	β^-	-76.84	(1,2-)	
	147	13 m	β^-	-75.44		
	148	2.30 m	β^-	-72.61	(3)	
	149	2.3 m	β^-	-71.37	(5/2+)	
	150	6.2 s	β^-	-68.0		
	150	30 s?	β^-			
	151	4 s	β^-	-67.44 s		
60	Nd 129	6 s	$[\beta^+ + \text{EC}], (\beta^+ + \text{EC})p$			
	130	28 s	β^+, EC		0+	
	132	1.8 m	$\beta^+ + \text{EC}$		0+	
	133	1.2 m	$\beta^+ + \text{EC}$			
	134	8 m	EC + β^+		0+	
	135	12 m	$\beta^+ + \text{EC}$	-76.29 s	9/2(-)	
	135	5.5 m	$[\beta^+ + \text{EC}]$	-76.29 s		
	136	50.6 m	EC 94%, β^+ 6%	-79.19	0+	
	137	38 m	β^+, EC	-79.41 s	1/2+	
	137m	1.6 s	IT	-78.89 s	11/2-	
	137	≈ 22 m	?			
	138	5.1 h	EC	-82.03 s	0+	
	139	30 m	EC 74.4%, β^+ 25.6%	-82.05	3/2+	
	139m	5.5 h	EC 87%, β^+ $\approx 1\%$, IT 12%	-81.82	11/2-	
	140	3.37 d	EC, no γ	-84.22	0+	
	141	2.5 h	EC 97.3%, β^+ 2.7%	-84.203	3/2+	
	141m	61 s	IT 99.97%, EC + β^+ 0.03%	-83.446	11/2-	

TABLE OF NUCLIDES

Z	El	A	Nuclide	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
60	Nd	142		27.2%		-85.949	0+	19 ^{rs}
		143		12.2%		-84.000	7/2-	320
		144		23.8%		-83.746	0+	4 ^{rs}
		145		2.1×10 ¹⁵ y	α	-81.430	7/2-	41
		146		8.3%		-80.923	0+	1.3
		147		17.2%		-78.144	5/2-	440 ^{rs}
		148		11.0 d	β^-	-77.407	0+	2.5
		149		5.7%		-74.374	5/2-	
		150		1.73 h	β^-	-73.682	0+	1.2
		151		5.6%		-70.945	(3/2+)	
		152		12.4 m	β^-	-70.146	0+	
		153		11.4 m	β^-		0+	
		154		40 s	β^-		0+	
61	Pm	132		4 s	$\beta^+ + \text{EC}$			
		133		12 s	$\beta^+ + \text{EC}$			
		134		24 s	$\beta^+ + \text{EC}$			
		135		0.9 m	$\beta^+ + \text{EC}$		(11/2-)	
		136		107 s	$\beta^+ + \text{EC}$	-71.36 s	(5+)	
		137		2.4 m	$\beta^+ + \text{EC}$	-74.21 s	(11/2-)	
		138		3.5 m	$\beta^+ + \text{EC}$	-75.03 s	(3+)	
		139		4.15 m	$\beta^+ + \text{EC}$	-77.60	(5/2+)	
		140		9.2 s	$\beta^+ + \text{EC}$	-78.18	1+	
		140m		5.9 m	EC 58%, β^+ 42%	-77.78	(7-)	
		141		20.9 m	β^+ 57%, EC 43%	-80.47	5/2+	
		142		40.5 s	β^+ 69%, EC 31%	-81.06	1+	
		143		265 d	EC	-82.959	5/2+	
		144		349 d	EC	-81.416	5-	
		145		17.7 y	EC 99+%, α 2.8×10 ⁻⁷ %	-81.270	5/2+	
		146		5.5 y	EC 63%, β^- 37%	-79.442	3-	8×10 ³ rs
		147		2.6234 y	β^-	-79.040	7/2+	97 ^g 85 ^m
		148		5.37 d	β^-	-76.870	1-	<3×10 ³ rs
		148m		41.3 d	β^- 95%, IT 5%	-76.733	6-	1.06×10 ⁴
		149		53.1 h	β^-	-76.063	7/2+	1.4×10 ³ rs
		150		2.68 h	β^-	-73.55	(1-)	
		151		28.4 h	β^-	-73.386	5/2+	<700 ^{rs}
		152		4.1 m	β^-	-71.29	(1+)	
		152		7.5 m	β^-		(4)	
		152		15 m	β^-		(≥6)	
		153		5.4 m	β^-	-70.76	(5/2-)	
		154		1.7 m	β^-	-68.45	(0,1)	
		154		2.7 m	β^-		(3,4)	
62	Sm	133		32.0 s	$\beta^+ + \text{EC}, (\beta^+ + \text{EC})p$			
		134		12 s	$\beta^+ + \text{EC}$		0+	
		135		10 s	$\beta^+ + \text{EC}, (\beta^+ + \text{EC})p$			
		137		44 s	$\beta^+ + \text{EC}$			
		138		3.0 m	$\beta^+ + \text{EC}$		0+	
		139		2.5 m	$\beta^+ + \text{EC}$	-72.40		
		139m		10 s	IT 93.7%, $\beta^+ + \text{EC}$ 6.3%	-71.94	(11/2-)	
		140		14.8 m	EC, β^+	-75.48 s	0+	
		141		10.2 m	EC 53%, β^+ 47%	-75.91	1/2+	
		141m		22.5 m	($\beta^+ + \text{EC}$) 99.69%, IT 0.31%	-75.73	11/2-	
		142		72.49 m	EC 90%, β^+ 10%	-78.978	0+	
		143		8.83 m	EC 54%, β^+ 46%	-79.511	3/2+	
		143m		66 s	IT 99.80%, $\beta^+ + \text{EC}$ 0.20%	-78.757	11/2-	
		144		3.1%		-81.964	0+	0.7 ^{rs}
		145		340 d	EC	-80.656	7/2-	110 ^{rs}
		146		<2×10 ⁻⁷ % 1.03×10 ⁸ y	α	-80.984	0+	
		147		15.1%		-79.265	7/2-	60
		148		1.06×10 ¹¹ y	α	-79.335	0+	4.7
		149		11.3%		-77.135	7/2-	4.2×10 ⁴
		150		8×10 ¹⁵ y	α	-77.049	0+	104

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
62	Sm	151	90 y	β^-	-74.574	5/2-	$1.5 \times 10^4 \text{ rs}$
		152	26.6%		-74.761	0+	204
		153	46.8 h	β^-	-72.557	3/2+	
		154	22.6%		-72.454	0+	5
		155	22.4 m	β^-	-70.196	3/2-	
		156	9.4 h	β^-	-69.368	0+	
		157	8.0 m	β^-	-66.86		
63	Eu	138	1.5 s	β^+			
		138	35 s	β^+			
		139	22 s	$\beta^+ + \text{EC}$			
		140	1.3 s	β^+, EC			
		140	≈ 20 s	$\beta^+ + \text{EC}$			
		141	40 s	β^+, EC	-69.88	(5/2+)	
		141m	3.3 s	$\beta^+ + \text{EC}$ 67%, IT 33%	-69.78	(11/2-)	
		142	2.4 s	β^+, EC	-71.48 s	1+	
		142	1.22 m	β^+, EC	-71.48 s	(7-)	
		143	2.61 m	$\beta^+ \approx 72\%, \text{EC} \approx 28\%$	-74.41	(5/2)+	
		144	10.2 s	$\beta^+ \approx 80\%, \text{EC} \approx 20\%$	-75.636	1+	
		145	5.93 d	EC 98%, β^+ 2%	-77.936	5/2+	
		146	4.62 d	EC 96.1%, β^+ 3.9%	-77.111	4-	
		146	38 h?	?			
		147	22 d	EC 99.5%, β^+ 0.5%, α 0.002%	-77.535	5/2+	
		148	54 d	EC 99.8%, β^+ 0.2%, α $9 \times 10^{-7}\%$	-76.235	5-	
		149	93.1 d	EC	-76.439	5/2+	
		150	36 y	EC		(4,5-)	
		150	12.6 h	β^- 89%, EC 10.6%, $\beta^+ \approx 0.6\%$	-74.756	0(-)	
		151	47.9%		-74.650	5/2+	$5.8 \times 10^3 \text{ q}$ $3.2 \times 10^3 \text{ m}$ 4 m2
		152	13 y	EC 73.0%, β^+ 0.019%, β^- 27.0%	-72.884	3-	
		152m1	9.3 h	β^- 76%, EC 24%, β^+ 0.011%	-72.836	0-	$< 3 \text{ rs}$
		152m2	96 m	IT	-72.736	8-	
		153	52.1%		-73.363	5/2+	380 q
		154	8.5 y	β^- 99.98%, EC 0.02%	-71.726	3-	
		154m	46 m	IT	-71.57	(8-)	
		155	4.9 y	β^-	-71.825	5/2+	4.0×10^3
		156	15 d	β^-	-70.083	0+	
		157	15.13 h	β^-	-69.465	(5/2+)	
		158	45.9 m	β^-	-67.24	(1-)	
		159	18.1 m	β^-	-65.93	(5/2+)	
		160	0.8 m	β^-	-63.54 s	(0-)	
		160	≈ 2.5 m?	β^-			
64	Gd	143	1.83 m	$\beta^+ + \text{EC}$	-68.51 s	(11/2, 13/2-)	
		143	39 s?	?			
		144	4.5 m	$\beta^+ + \text{EC}$	-71.94 s	0+	
		145	22 m	β^+, EC	-72.94 s	1/2+	
		145m	85 s	IT 95.3%, $\beta^+ + \text{EC}$ 4.7%	-72.19 s	11/2-	
		146	48.3 d	EC 99.93%, β^+ 0.07%	-75.361	0+	
		146	7 h?	α, EC			
		147	38.1 h	EC 99.74%, β^+ 0.26%	-75.207	7/2-	
		148	98 y	α	-76.268	0+	
		149	9.3 d	EC 99+%, α $5 \times 10^{-4}\%$	-75.131	7/2-	
		150	1.8×10^6 y	α	-75.765	0+	
		151	120 d	EC 99+%, α $\approx 8 \times 10^{-7}\%$	-74.168	7/2-	
		152	0.20%	α	-74.703	0+	1.1×10^3
		153	1.1×10^{14} y	α			
		153	241.6 d	EC	-73.119	3/2-	
		154	2.1%		-73.704	0+	90
		155	14.8%		-72.071	3/2-	6.1×10^4
		156	20.6%		-72.536	0+	2
		157	15.7%		-70.825	3/2-	2.55×10^5
		158	24.8%		-70.691	0+	2.4
		159	18.6 h	β^-	-68.562	3/2-	

TABLE OF NUCLIDES

Nuclide			Abundance	Decay	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A	or $t_{1/2}$	Mode			
64	Gd	160	21.6%		-67.943	0+	0.77
		161	3.7 m	β^-	-65.507	5/2-	$4 \times 10^4 \text{ rs}$
		162	9 m	β^-	-64.36	0+	
65	Tb	146	23 s	$\beta^+ + \text{EC}$	-67.26 s	(4-)	
		147	1.6 h	EC 95%, β^+ 5%	-70.51 s	5/2+	
		147	1.9 m	EC, β^+	-70.51 s	11/2-	
		148	2.2 m	EC + β^+		(9+)	
		148	60 m	EC 80%, β^+ 20%	-70.64	2-	
		149	4.15 h	EC 79%, β^+ 4.0%, α 17%	-71.434	(3/2, 5/2+)	
		149m	4.2 m	(EC, β^+) 99+%, α 0.020%	-71.394	(11/2-)	
		150	3.3 h	EC 90%, β^+ 10%, $\alpha \leq 0.05\%$	-71.098	(2)-	
		150	6.0 m	EC + β^+		(8, 9+)	
		151	17.6 h	EC 99%, β^+ $\approx 1\%$, α 0.009%	-71.608	1/2(+)	
		152	17.5 h	EC 87%, β^+ 13%	-70.853	2-	
		152m	4.2 m	IT 78%, EC 22%	-70.351	(8+)	
		153	2.30 d	EC 99+%, β^+ 0.04%	-71.329	5/2+	
		154	21 h	EC 98%, β^+ 2%	-70.24	0(+)	
		154m ₁	9 h	EC + β^+ 78%, IT 22%		3(-)	
		154m ₂	23 h	EC 98%, IT 2%		(7, 8-)	
		155	5.3 d	EC	-71.256	3/2+	
		156	5.3 d	EC	-70.098	3-	
		156m	5.0 h	IT, EC, β^+ 0.02%, β^- (weak)	-70.010	(0)+	
		156	24 h	IT			
		157	150 y	EC	-70.767	3/2+	
66	Dy	158	150 y	EC 82%, β^- 18%	-69.475	3-	
		158m	10.5 s	IT	-69.365	0-	
		159	100%		-69.536	3/2+	23
		160	72.1 d	β^-	-67.840	3-	500 rs
		161	6.90 d	β^-	-67.466	3/2+	
		162	7.7 m	β^-	-65.76	(1)-	
		163	19.5 m	β^-	-64.68	3/2+	
		164	3.0 m	β^-	-62.11	(5+)	
		147m	59 s	IT, EC?	-63.46 s		
		148	3.1 m	EC + β^+	-67.77 s	0+	
		149	4.1 m	$\beta^+ + \text{EC}$	-67.53 s	(7/2-)	
		150	7.17 m	(EC, β^+) 69%, α 31%	-69.14 s	0+	
		151	17 m	EC + β^+ 94%, α 6%	-68.601	7/2-	
		152	2.37 h	EC 99.91%, α 0.09%	-70.116	0+	
		153	6.3 h	(EC, β^+) 99+%, α 0.010%	-69.155	7/2(-)	
		154	$\approx 1 \times 10^7$ y	α	-70.392	0+	
		155	10.0 h	EC 97%, β^+ 3%	-69.157	3/2-	
		156	0.057%		-70.527	0+	33 sc
		157	8.1 h	EC	-69.425	3/2-	
		158	0.100%		-70.410	0+	70 rs
67	Ho	159	144.4 d	EC	-69.171	3/2-	
		160	2.3%		-69.674	0+	60
		161	19.0%		-68.056	5/2+	570
		162	25.5%		-68.181	0+	160
		163	24.9%		-66.382	5/2-	130
		164	28.1%		-65.967	0+	$1.8 \times 10^3 \text{ m}$ 900 q
		165	2.33 h	β^-	-63.611	7/2+	$4.0 \times 10^3 \text{ rs}$
		165m	1.26 m	IT 97.8%, β^- 2.2%	-63.503	1/2-	$2.1 \times 10^3 \text{ rs}$
		166	81.5 h	β^-	-62.583	0+	
		167	6.2 m	β^-	-59.97	(1/2-)	
		150	40 s	$\beta^+ + \text{EC}$	-62.04 s	(8, 9+)	
		151	47 s	$\beta^+ + \text{EC}$ 90%, α 10%	-63.44 s		
		151	35.6 s	$\beta^+ + \text{EC}$ 80%, α 20%	-63.44 s		
		152	52 s	$\beta^+ + \text{EC}$ 94%, α 6%		(9+)	
		152	2.4 m	$\beta^+ + \text{EC}$ 98.3%, α 1.7%	-63.71	(3+)	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
67	Ho 153	2.0 m	EC+ β^+ 99.96%, α 0.04%			
	153	9.3 m	EC+ β^+ 99.9%, α 0.1%	-64.954		
	153	27 m?	α			
	154	12 m	β^+ +EC 99+%, α 0.017%	-64.635	1	
	154	3.2 m	EC+ β^+ 99+%, α <0.002%			
	155	49 m	EC, β^+ , α	-66.055	5/2	
	156	56 m	β^+ +EC, IT		1	
	156	2 m	β^+ +EC	-65.43 s	(5+)	
	156	7.4 m?	β^+ +EC			
	157	12.6 m	β^+ , EC	-66.89	7/2-	
	158	11.5 m	EC, β^+	-66.433	5+	
	158m ₁	27 m	IT 65%, EC+ β^+ 35%	-66.366	2-	
	158(m ₂)	21 m	EC+ β^+		(9+)	
	159	33 m	EC	-67.318	7/2-	
	159m	8.3 s	IT	-67.112	1/2+	
	160	25.6 m	EC 99+%, β^+ \approx 0.4%	-66.388	5+	
	160m	5.02 m	IT 65%, (EC, β^+) 35%	-66.328	2-	
	160	3 s	?			
	160	7 m	?		(1+)	
	160	\approx 1 h	?		(9+)	
	161	2.48 h	EC	-67.203	7/2-	
	161m	6.7 s	IT	-66.992	1/2+	
	162	15 m	EC 95%, β^+ 5%	-66.047	1+	
	162m	68 m	IT 61%, EC+ β^+ 39%	-65.94	6-	
	163	\approx 33 y	EC, no γ	-66.379	7/2-	
	163m	1.09 s	IT	-66.081	1/2+	
	164	29.0 m	EC 58%, β^- 42%	-64.937	1+	
	164m	37 m	IT	-64.797	6(-)	
	165	100%		-64.896	7/2-	62 g 3 m
	166	26.80 h	β^-	-63.067	0-	
	166m	1.2×10^3 y	β^-	-63.062	(7-)	
	167	3.1 h	β^-	-62.316	(7/2-)	
	168	3.0 m	β^-	-60.27	3+	
	169	4.6 m	β^-	-58.793	(7/2-)	
	170	43 s	β^-	-56.10		
	170	2.8 m	β^-	-56.09		
68	Er 151	23 s	β^+ +EC	-58.20 s		
	152	10 s	α \approx 90%, EC+ β^+ \approx 10%	-60.41 s	0+	
	153	36 s	EC+ β^+ \approx 62%, α \approx 38%	-60.31 s		
	154	3.8 m	EC+ β^+ 99.5%, α 0.5%	-62.44 s	0+	
	155	5 m	EC+ β^+ 99+%, α \geq 0.02%	-62.057		
	156	20 m	EC+ β^+	-63.93 s	0+	
	157	24 m	β^+ , EC	-63.09 s	3/2-	
	158	2.4 h	EC, β^+	-65.03 s	0+	
	159	36 m	EC, β^+	-64.39	3/2-	
	160	28.6 h	EC, no γ	-66.052	0+	
	161	3.24 h	EC 99.96%, β^+ 0.04%	-65.197	3/2-	
	162	0.14%		-66.335	0-	19
	163	75.1 m	EC 99+%, β^+ 0.004%	-65.168	5/2-	
	164	1.56%		-65.940	0+	13
	165	10.4 h	EC, no γ	-64.518	5/2-	
	166	33.4%		-64.921	0+	15 m 5 s 650 s
	167	22.9%		-63.266	7/2+	
	167m	2.28 s	IT	-63.078	1/2-	
	168	27.1%		-62.985	0+	2.0
	169	9.40 d	β^-	-60.917	1/2-	
	170	14.9%		-60.104	0+	5.7
69	Tm 171	7.52 h	β^-	-57.714	5/2-	300 s
	172	49.5 h	β^-	-56.491	0+	
	173	1.4 m	β^-	-53.73	(7/2-)	
	173	12 m	β^-			
	173	1.6 s	α	-53.87 s		
	174	5 s	α	-54.53 s		
	174	3.0 s	α	-54.53 s		

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
69	Tm 155	39 s	α	-56.45 s		
	156	80 s	$\alpha, \beta^+ + \text{EC}$	-56.94 s		
	156	19 s	α	-56.94 s		
	157	3.6 m	$\text{EC} + \beta^+$	-58.49 s		
	158	4.0 m	$\beta^+ + \text{EC}$	-58.43 s		
	159	9.0 m	EC, β^+	-60.19 s	5/2(+)	
	160	9.2 m	$\text{EC } 85\%, \beta^+ 15\%$	-60.13	1-	
	161	30 m	EC, β^+	-61.68 s	7/2(+)	
	161	7 m?	?			
	162	22 m	$\text{EC } 93\%, \beta^+ 7\%$	-61.54	1-	
	162m	24 s	IT 90%, $\text{EC} + \beta^+ 10\%$		(5+)	
	163	1.8 h	$\text{EC } 99.8\%, \beta^+ 0.2\%$	-62.99	1/2+	
	163m	11 m	IT?, EC?			
	164	2.0 m	$\text{EC } 61\%, \beta^+ 39\%$	-61.978	1+	
	164m	5.1 m	IT $\approx 80\%, \text{EC} + \beta^+ \approx 20\%$		6(-)	
	165	30.06 h	$\text{EC } 99+\%, \beta^+ 0.007\%$	-62.924	1/2+	
	166	7.7 h	$\text{EC } 98\%, \beta^+ 2\%$	-61.874	2+	
	167	9.25 d	EC	-62.537	1/2+	
	168	93.1 d	$\text{EC } \approx 98\%, \beta^- ? \approx 2\%$	-61.306	3(+)	
	169	100%		-61.269	1/2+	98 _g
	170	128.6 d	$\beta^- 99+\%, \text{EC } 0.144\%$	-59.791	1-	92 ^{sc}
	171	1.92 y	β^-	-59.205	1/2+	4.5 ^{sc}
	172	63.6 h	β^-	-57.380	2-	
	173	8.2 h	β^-	-56.226	(1/2+)	
	174	5.4 m	β^-	-53.85	(4-)	
	175	15 m	β^-	-52.29	(1/2+)	
	176	1.9 m	β^-	-49.59 s	(4+)	
	176	1.5 m?	β^-			
70	Yb 154	0.39 s	α	-50.05 s	0+	
	155	1.6 s	α	-50.45 s		
	156	24 s	α	-53.06 s	0+	
	157	34 s	α	-53.27 s		
	158	1.1 m	$\text{EC} + \beta^+$	-55.53 s	0+	
	160	4.8 m	$\text{EC} + \beta^+$	-57.55 s	0+	
	161	4.2 m	$\beta^+ + \text{EC}$	-57.40 s		
	162	18.9 m	$\text{EC } \geq 98\%, \beta^+ \leq 2\%$	-59.34 s	0+	
	163	11.0 m	$\text{EC} + \beta^+$	-59.62	(3/2-)	
	164	76 m	EC	-60.88 s	0+	
	165	10 m	EC, β^+	-60.161	(5/2)-	
	166	56.7 h	EC	-61.582	0+	
	167	17.5 m	$\text{EC } 99.6\%, \beta^+ 0.4\%$	-60.583	5/2-	
	168	0.135%		-61.565	0+	3.5 $\times 10^3$ g+m
	169	32.0 d	EC	-60.361	7/2+	
	169m	46 s	IT	-60.337	1/2-	
	170	3.1%		-60.759	0+	10
	171	14.4%		-59.302	1/2-	53
	172	21.9%		-59.250	0+	1
	173	16.2%		-57.546	5/2-	17
	174	31.6%		-56.940	0+	19 _g
	175	4.19 d	β^-	-54.691	7/2-	
	176	12.6%		-53.490	0+	2.4 _{g+m}
71	Lu 176m	11.7 s	IT	-52.439	(8)-	
	177	1.9 n	β^-	-50.986	9/2+	
	177m	6.4 s	IT	-50.655	1/2-	
	178	74 m	β^-	-49.66	0+	
	155	0.07 s	α	-42.60 s		
	156	0.23 s	α	-43.81 s		
	156	≈ 0.5 s	α	-43.81 s		
	162	1.4 m?	$\beta^+ + \text{EC}$	-52.34 s		
	164	3.17 m	$\beta^+ + \text{EC}$	-54.58 s		
	165	11.8 m	$\text{EC} + \beta^+$	-56.16 s	1/2	
	166	2.6 m	EC, β^+	-56.10	(6-)	
	166m ₁	1.4 m	$\text{EC} + \beta^+ 58\%, \text{IT } 42\%$	-56.07	(3-)	
	166m ₂	2.1 m	$\text{EC} + \beta^+ > 80\%$	-56.06	(0-)	
	167	52 m	$\text{EC } 98.2\%, \beta^+ 1.8\%$	-57.45	7/2+	
	168	5.5 m	EC, β^+	-57.10	(6)-	
	168m	6.7 m	$\text{EC } \approx 88\%, \beta^+ \approx 12\%$	-56.88	3+	
	169	34.1 h	$\text{EC } 99.3\%, \beta^+ 0.7\%$	-57.881	7/2+	
	169m	2.7 m	IT	-57.852	1/2-	

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
71	Lu	170	2.02 d	EC, β^+	-57.319	0+	
		170m	0.7 s	IT	-57.226	4-	
		171	8.25 d	EC 99+%, β^+ \approx 0.005%	-57.821	7/2+	
		171m	79 s	IT	-57.750	1/2-	
		172	6.70 d	EC	-56.726	4-	
		172m	3.7 m	IT	-56.684	1-	
		173	1.37 y	EC	-56.871	7/2+	
		174	3.3 y	EC 99+%, β^+ 0.025%	-55.562	(1-)	
		174m	142 d	IT 99.3%, EC 0.7%	-55.391	(6-)	
		175	97.39%		-55.159	7/2+	^{16}m ^{10}g
		176	2.61% 3.6×10^{10} y	β^-	-53.381	7-	$2.0 \times 10^3 \text{g}$ ^7m
		176m	3.68 h	β^-	-53.254	1-	
		177	6.71 d	β^-	-52.382	7/2+	
		177m	160.5 d	β^- 78%, IT 22%	-51.412	23/2-	
		178	28.4 m	β^-	-50.30	1+	
		178m	23 m	β^-	-50.00	(9)-	
		178	5 m?	β^-			
		179	4.6 h	β^-	-49.11	(7/2+)	
		180	5.7 m	β^-	-46.68		
72	Hf	157	0.12 s	α	-38.96 s		
		158	3.0 s	α	-42.22 s	0+	
		159	5.6 s	α	-42.80 s		
		160	\approx 2 s	α	-45.75 s	0+	
		161	17 s	α	-46.13 s		
		166	6.8 m	EC + β^+	-53.48 s	0+	
		167	2.05 m	EC, β^+	-53.15 s	(5/2-)	
		168	25.9 m	EC \approx 98%, β^+ ? \approx 2%	-55.10 s	0+	
		169	3.3 m	EC 86%, β^+ 14%	-54.53	(5/2)-	
		170	16.0 h	EC	-56.12 s	0+	
		171	12.1 h	EC + β^+	-55.30 s	7/2+	
		172	1.87 y	EC	-56.33 s	0+	
		173	24.0 h	EC	-55.27 s	1/2-	
		174	0.16% 2.0×10^{15} y	α	-55.830	0+	400
		175	70 d	EC	-54.548	5/2-	
		176	5.2%		-54.567	0+	^{30}g ^{390}g
		177	18.6%		-52.879	7/2-	$^{1.0}\text{m}$ $2 \times 10^{-7} \text{r.s.}$ m^2
		177m ₁	1.1 s	IT	-51.564	23/2+	
		177m ₂	51 m	IT	-50.139	37/2-	
		178	27.1%		-52.434	0+	^{50}m ^{40}g
		178m ₁	4.0 s	IT	-51.287	8-	
		178m ₂	31 y	IT	-49.987	16+	
		179	13.7%		-50.462	9/2+	^{50}g $^{0.4}\text{sc}$ m
		179m ₁	18.7 s	IT	-50.087	1/2-	
		179m ₂	25.1 d	IT	-49.356	25/2-	
		180	35.2%		-49.779	0+	14
		180m	5.5 h	IT	-48.637	8-	
		181	42.4 d	β^-	-47.403	1/2-	$^{30}\text{r.s.}$ g
		182	9×10^6 y	β^-	-45.99	0+	
		182m	62 m	β^- 54%, IT 46%	-44.87	(8-)	
		183	64 m	β^-	-43.269	(3/2-)	
		184	4.12 h	β^-	-41.48	0+	
73	Ta	166	32 s	β^+ + EC	-46.10 s		
		167	3 m	β^+ + EC	-47.95 s		
		168	2.4 m	β^+ + EC	-48.40 s	(2-, 3+)	
		169	5 m	EC + β^+	-50.03 s		
		170	6.8 m	β^+ , EC	-50.12 s	(3+)	
		171	24 m	EC + β^+	-51.60 s		
		171	2.0 m?	?			
		171	6.3 m?	?			

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
73	Ta	172	37 m	EC $\approx 85\%$, β^+ $\approx 15\%$	-51.41 s	(3-)	
		173	3.6 h	EC, β^+	-52.37 s	(5/2-)	
		174	1.1 h	EC, β^+	-51.98	3(+)	
		175	10.5 h	EC, β^+	-52.35 s	7/2+	
		176	8.1 h	EC 99.3%, β^+ 0.7%	-51.47	(1-)	
		177	56.6 h	EC 99+%, β^+ $2.9 \times 10^{-4}\%$	-51.721	7/2+	
		178	9.3 m	EC 98.9%, β^+ 1.1%	-50.52	1+	
		178	2.4 h	EC		(7)-	
		179	1.7 y	EC, no γ	-50.347	(7/2+)	
		180(g)	0.0123% $\approx 1 \times 10^{13}$ y			(8+)	700
		180(m)	8.1 h	EC 87%, β^- 13%	-48.914	1	
		181	99.9877%		-48.425	7/2+	$21^g_{0.010 m_2}$ 8.2×10^3
		182	115 d	β^-	-46.417	3-	
		182m ₁	0.28 s	IT	-46.400	5+	
		182m ₂	15.8 m	IT	-45.897	10-	
		183	5.1 d	β^-	-45.279	7/2+	
		184	8.7 h	β^-	-42.821	(5-)	
		185	49 m	β^-	-41.360	(7/2+)	
		186	10.5 m	β^-	-38.60	(3-)	
74	W	160	≤ 0.2 s?	α		0+	
		162	<0.25 s	α	-34.13 s	0+	
		163	2.5 s	α , (β^+ +EC)?	-35.31 s		
		164	6 s	α	-38.04 s	0+	
		165	5.1 s	α	-38.67 s		
		166	16 s	α	-41.48 s	0+	
		170	4 m	EC+ β^+	-46.92 s	0+	
		171	9 m	EC+ β^+	-46.90 s		
		172	6.7 m	EC, β^+	-48.81 s	0+	
		173	16 m	EC+ β^+	-48.47 s		
		174	29 m	EC	-50.08 s	0+	
		175	34 m	EC+ β^+	-49.45 s	(1/2-)	
		176	2.3 h	EC	-50.57 s	0+	
		177	135 m	EC+ β^+	-49.72 s	(1/2-)	
		178	21.5 d	EC, no γ	-50.43	0+	
		179	38 m	EC	-49.283	(7/2-)	
		179m	6.4 m	IT 99.69%, EC 0.31%	-49.061	(1/2-)	
		180	0.13%		-49.624	0+	$\approx 10^{15}$
		181	121 d	EC	-48.237	9/2+	
		182	26.3%		-48.228	0+	$21^g+m_{10.1}$
		183	14.3%		-46.347	1/2-	
		183m	5.3 s	IT	-46.038	(11/2)+	
		184	30.7%		-45.687	0+	$1.8^g_{0.002 m}$
75	Re	185	75.1 d	β^-	-43.370	3/2-	
		185m	1.66 m	IT	-43.173	11/2+	
		186	28.6%		-42.498	0+	38
		187	23.9 h	β^-	-39.893	3/2-	70
		188	69.4 d	β^-	-38.657	0+	
		189	11.5 m	β^-	-35.47		
		190	30 m	β^-	-34.22	0+	
		170	8.0 s	β^+ +EC	-38.92 s		
		172	30 s	β^+ +EC	-41.51 s		
		174	2.3 m	β^+ +EC	-43.58 s		
		175	4.6 m	EC+ β^+	-45.15 s		
		176	5.2 m	EC+ β^+	-44.97 s		
		177	14 m	EC+ β^+	-46.12 s	(5/2-)	
		178	13.2 m	EC 89%, β^+ 11%	-45.77	(3)	
		179	19.7 m	EC 99.1%, β^+ 0.9%	-46.59	(5/2+)	
		180	2.4 m	EC 92%, β^+ 8%	-45.829	(1)-	
		181	20 h	EC	-46.44 s	5/2+	
		182	64 h	EC	-45.43 s	7+, 6+	
		182	12.7 h	EC 99.8%, β^+ 0.2%	-45.43 s	2+	
		183	71 d	EC	-45.791	(5/2)+	
		184	38 d	EC	-44.191	3-	
		184m	169 d	IT 75%, EC 25%	-44.003	8+	
		184	2.2 d?	?			

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
75	Re 185	37.40%		-43.802	5/2+	110 _g 0.3 _m ^{sc}
	186	90.6 h	β^- 92.2%, EC 7.8%	-41.910	1-	
	186m	2×10^5 y	IT	-41.76	[8+]	
	187	62.60% 4×10^{10} y	β^- , no γ	-41.205	5/2+	74 _g 1.0 _m
	188	16.9 h	β^-	-39.006	1-	
	188m	18.7 m	IT	-38.834	(6)-	
	189	24.3 h	β^-	-37.970	(5/2+)	
	189	4.3 d?	β^-			
	190	3.1 m	β^-	-35.52	(2-)	
	190m	3.2 h	β^- \approx 51%, IT \approx 49%	-35.30	(6-)	
	191	9.8 m	β^-	-34.343		
	192	16 s	β^-	-31.9 s		
76	Os 169	3.0 s	α	-30.55 s		
	170	7.1 s	α	-33.53 s	0+	
	171	8 s	α	-34.16 s		
	172	19 s	EC+ β^+ 99+%, α \leq 0.3%	-36.84 s	0+	
	173	16 s	β^+ +EC 99.98%, α 0.02%	-37.41 s		
	174	45 s	EC+ β^+ 99.98%, α 0.02%	-39.62 s	0+	
	175	1.4 m	[EC+ β^+]	-39.71 s		
	176	3.6 m	EC+ β^+	-41.81 s	0+	
	177	4 m	EC+ β^+	-41.62 s		
	178	5.0 m	EC+ β^+	-43.35 s	0+	
	179	7 m	EC+ β^+	-42.89 s		
	180	22 m	EC	-44.22 s	0+	
	181	105 m	EC+ β^+		(1/2-)	
	181	2.7 m	EC, β^+	-43.41 s	(7/2-)	
	182	22.0 h	EC	-44.58 s	0+	
	183	13 h	EC 99.91%, β^+ 0.09%	-43.49 s	9/2+	
	183m	9.9 h	EC 89%, IT 11%	-43.32 s	1/2-	
	184	0.018%		-44.233	0+	3×10^3
	185	93.6 d	EC	-42.787	1/2-	
	186	1.6% 2×10^{15} y	α	-42.987	0+	80
	187	1.6%		-41.208	1/2-	330
	188	13.3%		-41.125	0+	≤ 5 _g 20 _g
	189	16.1%		-38.978	3/2-	2.6×10^{-4} _m
	189m	5.7 h	IT	-38.947	9/2-	
	190	26.4%		-38.699	0+	9 _m 4 _g
	190m	9.9 m	IT	-36.994	10-	
	191	15.4 d	β^-	-36.388	9/2-	
	191m	13.1 h	IT	-36.314	3/2-	
	192	41.0%		-35.875	0+	2.0
	192m	6.1 s	IT	-33.860	(10-)	
	193	30.6 h	β^-	-33.387	(3, 2-)	1.5×10^3 _{rs}
	194	6.0 y	β^-	-32.417	0+	
	195	6.5 m	β^-	-29.69		
	196	35.0 m	β^-		0+	
77	Ir 171	1.0 s	α	-26.18 s		
	172	1.7 s	α	-27.32 s		
	173	3.0 s	α	-29.91 s		
	174	4 s	α	-30.89 s		
	175	4 s	α	-33.16 s		
	176	8 s	α	-33.84 s		
	177	21 s	α	-35.82 s		
	178	12 s	β^+ +EC	-36.27 s		
	179	4 m	EC+ β^+	-37.89 s		
	180	1.5 m	EC+ β^+	-37.93 s		
	181	5 m	EC+ β^+	-39.34 s		
	182	15 m	EC+ β^+	-38.98 s		
	183	0.9 h	EC+ β^+	-40.09 s	(9/2-)	
	184	3.0 h	EC, β^+	-39.51	5	

TABLE OF NUCLIDES

Nuclide			Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A					
77	Ir	185	14 h	EC+ β^+	-40.29 s	5/2(-)	
		186	16 h	EC 98%, β^+ 2%	-39.156	5(+)	
		186	1.7 h	EC, β^+		(2-)	
		187	10.5 h	EC	-39.71 s	3/2+	
		188	41.5 h	EC 99.6%, β^+ 0.4%	-38.323	2-	
		189	13.1 d	EC	-38.48 s	3/2+	
		190	11.8 d	EC	-36.70	(4+)	
		190m ₁	1.2 h	IT	-36.67	(7+)	
		190m ₂	3.2 h	EC 95%,IT 5%	-36.52	(11-)	
		191	37.3%		-36.698	3/2+	540 _g 400 _{m1} 0.10 _{m2}
		191m	4.9 s	IT	-36.527	11/2-	
		192	74.2 d	β^- 95.4%,EC 4.6%	-34.826	4(-)	1.0 $\times 10^3$ _o
		192m ₁	1.45 m	IT 99+%, β^- 0.017%	-34.768	1(+)	
		192m ₂	241 y	IT	-34.665	9(+)	
		193	62.7%		-34.519	3/2+	110 _g
		193m	10.6 d	IT	-34.439	11/2-	0.05 _m
		194	19.2 h	β^-	-32.514	1-	
		194m	0.47 y	β^-		(11)	
		195	2.5 h	β^-	-31.692	(3/2+)	
		195m	3.8 h	β^-	-31.57	(11/2-)	
		196	52 s	β^-	-29.44	(0,1-)	
		196m	1.40 h	β^-	-29.01	(10,11)	
		197	9.8 m	β^-	-28.43		
		198	8 s	β^-	-25.52		
78	Pt	173	≤ 1 s	α	-21.79 s		
		174	0.7 s	$\alpha \approx 80\%$	-24.93 s	0+	
		175	2.4 s	$\alpha \approx 75\%$	-25.64 s		
		176	6.3 s	α 42%	-28.54 s	0+	
		177	7 s	α 9%	-29.35 s		
		178	21 s	α 7%	-31.63 s	0+	
		179	33 s	α 0.27%	-32.01 s	1/2	
		180	52 s	$\alpha \approx 0.3\%$	-34.12 s	0+	
		181	51 s	$\alpha \approx 0.06\%$	-34.06 s		
		182	2.6 m	EC+ β^+ 99+%, $\alpha \approx 0.02\%$	-35.98 s	0+	
		183	7 m	EC+ β^+ 99+%, $\alpha \approx 0.0013\%$	-35.63 s		
		184	17.3 m	EC+ β^+ 99+%, $\alpha \approx 0.001\%$	-37.21 s	0+	
		184	42 m?	EC			
		185	71 m	EC+ β^+	-36.49 s		
		185	33 m	EC+ β^+	-36.49 s		
		186	2.0 h	EC 99+%, $\alpha \approx 1.4 \times 10^{-4}\%$	-37.83 s	0+	
		187	2.35 h	EC+ β^+	-36.81 s	3/2	
		188	10.2 d	EC 99+%, α $3 \times 10^{-5}\%$	-37.788	0+	
		189	10.9 h	EC, β^+	-36.57 s	3/2-	
		190	0.013% 6×10^{11} y	α	-37.318	0+	800
		191	2.9 d	EC	-35.698	3/2-	
		192	0.78%		-36.283	0+	10 _{g+m} 2 _m
		193	50 y	EC,no γ	-34.458	(1/2)-	
		193m	4.3 d	IT	-34.308	(13/2)+	
		194	32.9%		-34.765	0+	≈ 1 _g 0.09 _m
		195	33.8%		-32.802	1/2-	27 _m
		195m	4.02 d	IT	-32.543	13/2+	
		196	25.3%		-32.652	0+	0.7 _g 0.05 _m
		197	18.3 h	β^-	-30.431	1/2-	
		197m	94 m	IT 97%, β^- 3%	-30.032	13/2+	
		198	7.2%		-29.921	0+	3.7 _g 0.027 _m

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
78	Pt	199	30.8 m	β^-	-27.420	(5/2-)	≈ 15 ¹⁵
		199m	14 s	IT	-26.996	(13/2+)	
		200	12.6 h	β^-	-26.60 s	0+	
		201	2.5 m	β^-	-23.74		
79	Au	175	≈ 0.14 s	α	-17.16 s		98.8 2.5×10^4 ≈ 30 ¹⁵
		176	1.2 s	α	-18.40 s		
		177	1.3 s	α	-21.19 s		
		178	2.6 s	α	-22.41 s		
		179	7.5 s	α	-24.75 s		
		181	11 s	α 1.1%	-27.64 s		
		182	21 s	$\beta^+ + \text{EC}$ 99+%, α ? $\approx 0.04\%$	-28.18 s		
		183	42 s	α 0.30%	-30.01 s		
		184	53 s	$\beta^+ + \text{EC}$ 99+%, α 0.022%	-30.22 s		
		185	4.3 m	$\text{EC} + \beta^+$ 99.91%, α 0.09%	-31.73 s		
		185	6.8 m	$\text{EC} + \beta^+$	-31.73 s		
		186	11 m	$\text{EC} + \beta^+$	-31.69 s	3	
		186	≤ 2 m	$\text{EC} + \beta^+$	-31.69 s		
		187	8 m	$\text{EC} + \beta^+, \alpha$?	-32.87 s	1/2	
		188	8.8 m	$\text{EC} + \beta^+$	-32.49 s	1	
		189	28.7 m	$\text{EC} + \beta^+$	-33.41 s	1/2+	
		189m	4.6 m	$\text{EC} + \beta^+, \text{IT}?$	-33.16 s	11/2-	
		190	43 m	EC 98%, β^+ 2%	-32.876	1-	
		191	3.2 h	EC	-33.87	3/2+	
		191m	0.9 s	IT	-33.60	(11/2-)	
		192	5.0 h	EC $\approx 99\%$, β^+ $\approx 1\%$	-32.768	1-	
		193	17.5 h	EC, β^+ ?	-33.36 s	3/2+	
		193m	3.9 s	IT 99.97%, EC 0.03%	-33.07 s	11/2-	
		194	39.5 h	EC $\approx 97\%$, β^+ $\approx 3\%$	-32.256	1-	
		195	183 d	EC	-32.572	3/2+	
		195m	30.6 s	IT	-32.253	11/2-	
		196	6.18 d	EC 93.0%, β^+ $5 \times 10^{-5}\%$, β^- 7.0%	-31.162	2-	
		196m ₁	8.2 s	IT	-31.077	5+	
		196m ₂	9.7 h	IT	-30.567	12-	
		197	100%		-31.150	3/2+	
		197m	7.7 s	IT	-30.741	11/2-	
		198	2.696 d	β^-	-29.591	2-	
		198m	2.30 d	IT	-28.779	(12-)	
		199	3.14 d	β^-	-29.104	3/2+	
		200	48.4 m	β^-	-27.30	1(-)	
		200m	18.7 h	$\beta^- \approx 84\%$, IT $\approx 16\%$	≈ 26.3	12(-)	
		201	26 m	β^-	-26.40	(3/2+)	
		202	29 s	β^-	-23.86	(1-)	
		203	53 s	β^-	-22.98 s		
		204	4 s?	β^-			
		204	40 s	β^-			
80	Hg	177	≈ 0.2 s	α	-12.65 s		0+
		178	0.5 s	$\alpha \approx 84\%$, $[\text{EC} + \beta^+] \approx 16\%$	-15.93 s		
		179	1.09 s	$\alpha \approx 53\%$, $\text{EC} + \beta^+ \approx 47\%$, ($\text{EC} + \beta^+$)p	-16.80 s		
		179	3.5 s?	α	-16.80 s		
		180	2.9 s	α	-19.86 s		
		180	5.9 s?	α			
		181	3.6 s	$\beta^+ + \text{EC}$ 74%, α 26%, ($\beta^+ + \text{EC}$)p 0.014%, ($\beta^+ + \text{EC}$) α $9 \times 10^{-6}\%$	-20.79 s	1/2(-)	
		182	11 s	$\text{EC} + \beta^+$ 91%, α 9%	-23.21 s	0+	
		183	8.8 s	EC 61%, β^+ 27%, α 12%, ($\text{EC} + \beta^+$)p $3 \times 10^{-4}\%$	-23.69 s	1/2	
		184	30.6 s	$\text{EC} + \beta^+$ 98.7%, α 1.3%	-26.04 s	0+	
		185(g)	48 s	$\text{EC} + \beta^+$ $\approx 95\%$, $\alpha \approx 5\%$	-26.14 s	1/2-	
		185(m)	17 s	$\alpha, \text{IT}?$			
		185	155 s	?			
		186	1.4 m	EC 96%, β^+ 4%, α 0.016%	-28.35 s	0+	

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
80	Hg	187	1.6 m	$\text{EC}+\beta^+, \alpha > 2.5 \times 10^{-4}\%$	-28.06 s		
		187	2.4 m	$\text{EC}+\beta^+, \alpha > 1.2 \times 10^{-4}\%$	-28.06 s	3/2	
		187	3.0 m	$\text{EC}+\beta^+, \alpha$			
		188	3.3 m	$\text{EC}+\beta^+$	-29.88 s	0+	
		189	8.7 m	$\text{EC}+\beta^+$	-29.21 s	(13/2+)	
		189	7.5 m	$\text{EC}+\beta^+$	-29.21 s	3/2-	
		190	20 m	EC	-30.96	0+	
		191	≈ 49 m	$\text{EC}+\beta^+$	-30.48	(3/2-)	
		191m	51 m	$\text{EC}+\beta^+$	≈ -30.34	(13/2+)	
		192	4.9 h	EC	-31.97 s	0+	
		193	4 h	$\text{EC}, \beta^+?$	-31.02 s	3/2-	
		193m	11 h	$\text{EC } 92\%, \beta^+ 0.34\%$, IT 8%	-30.88 s	13/2+	
		194	260 y	EC, no γ	-32.206	0+	
		194	0.40 s	?			
		195	10 h	EC	-31.05	1/2-	
		195m	41 h	EC 50%, IT 50%	-30.87	13/2+	
		196	0.15%		-31.846	0+	$3.0 \times 10^3 \text{ }^{\text{sc}}_g$
		197	64.1 h	EC	-30.735	1/2-	$120 \text{ }^{\text{sc}}_m$
		197m	23.8 h	IT 93%, EC 7%	-30.436	13/2+	
		198	10.0%		-30.964	0+	0.018 $_m$
		199	16.8%		-29.557	1/2-	2×10^3
		199m	42.6 m	IT	-29.025	13/2+	
		200	23.1%		-29.514	0+	<60
		201	13.2%		-27.672	3/2-	<60
		202	29.8%		-27.356	0+	5.0
		203	46.8 d	β^-	-25.277	5/2-	
		204	6.9%		-24.703	0+	0.4 $^{\text{rs}}$
		205	5.2 m	β^-	-22.299	1/2-	
		206	8.1 m	β^-	-20.955	0+	
81	Tl	184	11 s	$\beta^+ + \text{EC } 98\%, \alpha 2\%$	-16.90 s		
		185m	1.7 s	α, IT	-18.66 s	(9/2-)	
		186	28 s	(β^+, EC) 99+%, $\alpha? \approx 0.006\%$	-19.86 s		
		186m	3 s	IT	-19.49 s		
		187m	16 s	α, IT	≈ -21.60 s	(9/2-)	
		188	71 s	β^+, EC	-22.29 s	(7)	
		189	1.4 m	$\beta^+ + \text{EC}$	-24.02 s		
		189	2.3 m	$\beta^+ + \text{EC}$	-24.02 s		
		190	2.6 m	β^+, EC	-24.16	(2-)	
		190	3.7 m	β^+, EC		(7+)	
		191	5.2 m	EC 98%, $\beta^+ 2\%$	-25.67		
		192	10.8 m	$\text{EC}+\beta^+$	-25.59 s	(7+)	
		192	10.6 m	$\text{EC}+\beta^+$	-25.59 s	(2-)	
		193	22 m	EC $\geq 96\%, \beta^+ \leq 4\%$	-27.02 s	1/2+	
		193m	2.1 m	IT		(9/2-)	
		194	33.0 m	$\text{EC}+\beta^+$	-26.81 s	2-	
		194m	32.8 m	$\text{EC}+\beta^+$	≈ -26.51 s	(7+)	
		195	1.16 h	EC 99.3%, $\beta^+ 0.7\%$	-27.85	1/2+	
		195m	3.6 s	IT	-27.37	9/2-	
		196	1.84 h	$\text{EC}+\beta^+$	-27.35 s	2(-)	
		196m	1.41 h	EC+ β^+ 96.2%, IT 3.8%	-26.95 s	(7+)	
		197	2.84 h	EC 99.5%, $\beta^+ 0.5\%$	-28.33 s	1/2+	
		197m	0.54 s	IT	-27.72 s	9/2-	
		198	5.3 h	EC $\approx 99.3\%, \beta^+ \approx 0.7\%$	-27.50	2-	
		198m	1.87 h	EC+ β^+ 56%, IT 44%	-26.96	7+	
		199	7.4 h	EC	-28.08	1/2+	
		200	26.1 h	EC 99.65%, $\beta^+ 0.35\%$	-27.060	2-	
		201	73 h	EC	-27.185	1/2+	
		202	12.2 d	EC	-25.988	2-	
		203	29.5%		-25.769	1/2+	10
		204	3.77 y	$\beta^- 97.4\%, \text{EC } 2.6\%$	-24.353	2-	22 $^{\text{rs}}$
		205	70.5%		-23.837	1/2+	$0.10 \text{ }^{\text{rs}}_g$
		206	4.20 m	β^-	-22.269	0-	
		206m	3.6 m	IT	-19.626	(12-)	
		207	4.77 m	β^-	-21.041	1/2+	
		207m	1.3 s	IT	-19.700	11/2-	

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
81	Tl	208	3.053 m	β^-	-16.768	(5+)	
		209	2.2 m	β^-	-13.650	(1/2+)	
		210	1.30 m	$\beta^-, \beta^- n \approx 0.007\%$	-9.251		
82	Pb	185	≈ 2 s	α	-11.74 s		
		186	8 s	$\alpha \approx 2.4\%$	-14.33 s	0+	
		187	17 s	$\alpha \approx 2.0\%$	-14.94 s		
		188	25 s	EC+ β^+ 97%, α 3%	-17.50 s	0+	
		189	51 s	EC+ β^+ 99+%, $\alpha \approx 0.4\%$	-17.86 s		
		190	1.2 m	EC+ β^+ 99.8%, α 0.2%	-20.22 s	0+	
		191	1.3 m	EC+ β^+ 99+%, α 0.013%	-20.23 s		
		192	2.3 m	EC+ β^+ 99+%, α 0.007%	-22.29 s	0+	
		193	5.8 m	EC+ β^+	-22.07 s	(13/2+)	
		194	11 m	EC+ β^+	-23.81 s	0+	
		195	16.4 m	EC+ β^+	-23.55 s	(13/2+)	
		196	37 m	EC	-25.15 s	0+	
		197	?	EC+ β^+	-24.63 s	(3/2-)	
		197m	42 m	EC+ β^+ 81%, IT 19%	-24.31 s	(13/2+)	
		198	2.4 h	EC	-25.90 s	0+	
		199	1.5 h	EC $\approx 98.6\%$, β^+ $\approx 1.4\%$	-25.28	5/2-	
		199m	12.2 m	IT 93%, EC+ β^+ 7%	-24.86	13/2+	
		200	21.5 h	EC	-26.16 s	0+	
		201	9.4 h	EC 99+%, β^+ $\leq 0.034\%$	-25.327	5/2-	
		201m	61 s	IT	-24.699	13/2+	
		202	$\approx 3 \times 10^5$ y	EC, no γ	-25.942	0+	
		202m	3.62 h	IT 90.5%, EC 9.5%	-23.772	9-	
		203	52.0 h	EC	-24.794	5/2-	
		203m ₁	6.1 s	IT	-23.969	13/2+	
		203m ₂	0.48 s	IT	-21.844	29/2-	
		204	1.42%		-25.117	0+	0.7
		204m	66.9 m	IT	-22.932	9-	
		205	1.4×10^7 y	EC, no γ	-23.777	5/2-	3.8^{+5}
		206	24.1%		-23.795	0+	0.03 ₉
		207	22.1%		-22.463	1/2-	0.71
		207m	0.81 s	IT	-20.830	13/2+	
		208	52.3%		-21.759	0+	5.0×10^{-4}
		209	3.25 h	β^- , no γ	-17.624	9/2+	
		210	22.3 y	β^- 99+%, α $1.7 \times 10^{-6}\%$	-14.738	0+	0.5
		211	36.1 m	β^-	-10.492	(9/2+)	
		212	10.64 h	β^-	-7.562	0+	
		213	10.2 m	β^-	-3.14 s		
		214	26.8 m	β^-	-0.185	0+	
83	Bi	189	<1.5 s	α	-9.87 s		
		190	5.4 s	$\alpha \approx 90\%$	-10.85 s		
		191	13 s	$\alpha \approx 40\%$	-13.05 s		
		191m	≈ 20 s	α			
		192	42 s	$\alpha \approx 20\%$	-13.67 s		
		193	64 s	$\alpha \approx 60\%$	-15.56 s		
		193m	3.5 s	$\alpha \approx 25\%$			
		194	1.7 m	β^+ +EC 99+%, α <0.2%	-15.98	(10-)	
		195	2.8 m	α <0.2%	-17.68		
		195m	90 s	α 4%			
		196	4.5 m	β^+ +EC	-17.76 s		
		197(m)	8 m	β^+ +EC 99.89%, α 0.11%			
		198	11.8 m	EC+ β^+	-19.30 s	(7+)	
		198m	7.7 s	IT	-19.05 s	(10-)	
		199(g)	27 m	EC	-20.61 s	9/2-	
		199(m)	24.7 m	α	≈ 20.00 s		
		200	36 m	EC, β^+ (weak)	-20.46 s	7(+)	
		200m	0.40 s	IT	-20.03 s	10(-)	
		201	1.8 h	EC+ β^+	-21.41 s	9/2-	
		201m	59 m	EC+ β^+ , IT, $\alpha \approx 0.02\%$	-20.56 s	(1/2+)	
		202	1.7 h	EC 99.5%, β^+ 0.5%	-21.04 s	5(+)	
		203	11.8 h	EC $\approx 99.7\%$, β^+ $\approx 0.3\%$	-21.60	9/2-	
		204	11.2 h	EC	-20.82 s	6+	
		205	15.3 d	EC 99.90%, β^+ 0.10%	-21.070	9/2-	
		206	6.243 d	EC, β^+ ? $8 \times 10^{-4}\%$	-20.033	6+	
		207	38 y	EC 99+%, β^+ 0.012%	-20.058	9/2-	
		208	3.68×10^5 y	EC	-18.879	(5)+	

TABLE OF NUCLIDES

Z	El	A	Nuclide	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
83	Bi	209		100%		-18.268	9/2-	0.019^{rs}_g 0.014^{rs}_m 0.050^{sc}
		210		5.01 d	β^- 99+%, α $1.3 \times 10^{-4}\%$	-14.801	1-	
		210m		3.0×10^6 y	α	-14.530	9-	
		211		2.15 m	α 99.72%, β^- 0.28%	-11.865	(9/2)-	
		212		60.60 m	β^- 64.0%, $\beta^- \alpha$ 0.014%, α 36.0%	-8.135	1(-)	
		212m ₁		25 m	α $\leq 93\%$, β^- $\geq 7\%$	-7.88	[9-]	
		212m ₂		9 m	β^- $\leq 100\%$		[15-]	
		213		45.6 m	β^- 97.8%, α 2.2%	-5.243	(9/2)-	
		214		19.7 m	β^- 99+%, $\beta^- \alpha$ 0.0031%, α 0.021%	-1.209	(1-)	
		215		7 m	β^-	1.71		
84	Po	193		≤ 1 s	α	-8.31 s		
		194		0.6 s	α	-10.81 s	0+	
		195(g)		4.5 s	α	-11.06 s		
		195(m)		2.0 s	α			
		196		5 s	α	-13.21 s	0+	
		197		58 s	α 90%	-13.23 s		
		197m		26 s	α			
		198		1.78 m	α 70%, EC+ β^+ 30%	-15.07 s	0+	
		199		5.2 m	EC+ β^+ 88%, α 12%	-15.05 s	(3/2-)	
		199m		4.2 m	EC+ β^+ 61%, α 39%		(13/2+)	
		200		11.4 m	EC+ β^+ 86%, α 14%	-16.74 s	0+	
		201		15.2 m	EC+ β^+ 98.4%, α 1.6%	-16.41 s	3/2(-)	
		201m		8.9 m	IT 53%, EC+ β^+ 44%, α 2.9%	-15.98 s	(13/2+)	
		202		44 m	EC+ β^+ 98.0%, α 2.0%	-17.78 s	0+	
		203		33 m	EC+ β^+ 99.89%, α 0.11%	-17.36	5/2-	
		203m		1.2 m	IT 96%, EC+ β^+ 4%	-16.72	(13/2+)	
		204		3.57 h	EC 99.4%, α 0.6%	-18.25 s	0+	
		205		1.80 h	EC+ β^+ 99.5%, α 0.5%	-17.576	5/2-	
		206		8.8 d	EC 94.5%, α 5.5%	-18.190	0+	
		207		5.7 h	EC 99.5%, β^+ 0.5%, α 0.008%	-17.150	5/2-	
		207m		2.8 s	IT	-15.766	19/2-	
		208		2.90 y	α 99+%, EC 0.0018%	-17.475	0+	
		209		102 y	α 99.74%, EC 0.26%	-16.373	1/2-	
		210		138.38 d	α	-15.963	0+	$<0.03^{rs}_g$ $<5 \times 10^{-4}^{rs}_m$ $<0.002_o$
		211		0.516 s	α	-12.444	(9/2+)	
		211m		25 s	α	-10.982	(25/2+)	
		212		0.30 μ s	α	-10.381	0+	
		212m		45 s	α	-7.476	[16+]	
		213		4 μ s	α	-6.663	9/2+	
		214		164 μ s	α	-4.479	0+	
		215		1.78 ms	α 99+%, β^- $2.3 \times 10^{-4}\%$	-0.540	(9/2)+	
		216		0.15 s	α	1.769	0+	
		217		<10 s	α	5.96 s		
		218		3.05 m	α 99+%, β^- 0.018%	8.355	0+	
85	At	196		0.3 s	α	-4.05 s		
		197		0.4 s	α	-6.03 s		
		198		4.9 s	α	-6.67		
		198m		1.5 s	α			
		199		7.2 s	α	-8.47		
		200(g)		42 s	α 53%, EC+ β^+ 47%	-8.67 s		
		200(m)		4.3 s	α			
		201		1.5 m	α 71%, EC+ β^+ 29%	-10.52 s		
		202		3.0 m	EC+ β^+ 85%, α 15%	-10.52 s		
		203		7.3 m	EC+ β^+ 69%, α 31%	-11.97 s		
		204		9.1 m	EC+ β^+ 95.6%, α 4.4%	-11.97 s	(5+)	
		205		26 m	EC 87%, β^+ 3%, α 10%	-12.96 s	9/2-	
		206		31 m	EC 82%, β^+ 17%, α 1.0%	-12.73 s	(5+)	

TABLE OF NUCLIDES

Z	Nuclide		Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J^π	$\sigma_n(\text{b})$
	El	A					
85	At	207	1.8 h	EC+ β^+ $\approx 90\%$, $\alpha \approx 10\%$	-13.31	9/2-	
		208	1.63 h	EC+ β^+ 99.4%, α 0.6%	-12.64 s	(6+)	
		209	5.4 h	EC 95.9%, α 4.1%	-12.888	9/2-	
		210	8.3 h	EC+ β^+ 99.82%, α 0.18%	-11.976	5+	
		211	7.21 h	EC 58.1%, α 41.9%	-11.653	9/2-	
		212	0.315 s	α	-8.625		
		212m	0.12 s	α	-8.403		
		213	0.11 μs	α , no γ	-6.589	9/2-	
		214	$\approx 2 \mu\text{s}$	α	-3.389		
		215	0.10 ms	α	-1.262	(9/2)-	
		216	0.30 ms	α	2.237	1(-)	
		217	32.3 ms	α 99+%, β^- 0.012%	4.382	(9/2-)	
		218	≈ 2 s	α 99.9%, β^- 0.1%	8.099		
		219	0.9 m	$\alpha \approx 97\%$, $\beta^- \approx 3\%$	10.53		
86	Rn	200	1 s	α	-3.74 s	0+	
		201(g)	7.0 s	α	-3.95 s		
		201(m)	3.8 s	α			
		<202	<1 s?	α			
		202	9.9 s	$\alpha > 70\%$	-5.88 s	0+	
		203	45 s	α 65%, EC+ β^+ 35%	-6.00 s		
		203m	28 s	α	- ≈ 5.95 s		
		204	75 s	$\alpha \approx 72\%$, EC+ β^+ $\approx 28\%$	-7.77 s	0+	
		205	170 s	EC+ β^+ 77%, α 23%	-7.60 s		
		206	5.7 m	α 64%, EC+ β^+ 36%	-8.97 s	0+	
		207	9.3 m	EC+ β^+ 77%, α 23%	-8.69	5/2-	
		208	24 m	α 52%, EC+ β^+ 48%	-9.56 s	0+	
		209	29 m	EC 80%, β^+ 3%, α 17%	-8.994	5/2-	
		210	2.4 h	α 96%, EC 4%	-9.608	0+	
		211	14.6 h	EC+ β^+ 74%, α 26%	-8.761	1/2-	
		212	23 m	α	-8.666	0+	
		213	25.0 ms	α	-5.706	(9/2+)	
		214	0.27 μs	α	-4.328	0+	
		215	2.3 μs	α , no γ	-1.179	(9/2+)	
		216	45 μs	α	0.245	0+	
		217	0.54 ms	α	3.649	9/2+	
		218	35 ms	α	5.212	0+	
		219	3.96 s	α	8.831	(5/2)+	
		220	55.6 s	α	10.599	0+	<0.2 ^{rs}
		221	25 m	$\beta^- \approx 80\%$, $\alpha \approx 20\%$	14.38 s		
		222	3.8235 d	α	16.370	0+	0.73 ^{rs}
		223	43 m	β^-			
		224	1.8 h	β^-	22.26 s	0+	
		225	4.5 m	β^-	27.59 s		
		226	6.0 m	β^-		0+	
87	Fr	203	0.7 s	α , β^+ +EC	1.23		
		204	2.1 s	α	0.92 s		
		205	3.7 s	α	-1.04 s		
		206	16.0 s	α 85%, EC+ β^+ 15%	-1.18 s		
		207	14.8 s	α 93%, EC+ β^+ 7%	-2.65 s	(9/2-)	
		208	58.0 s	α 74%, EC+ β^+ 26%	-2.77 s		
		209	50.0 s	α 89%, EC+ β^+ 11%	-3.76 s	9/2-	
		210	3.2 m	α , EC+ β^+	-3.64 s		
		211	3.1 m	α , EC+ β^+	-4.22		
		212	19.3 m	EC+ β^+ 56%, α 44%	-3.69 s		
		213	34.7 s	α 99.45%, EC 0.55%	-3.556	(9/2-)	
		214	5.0 ms	α	-0.965	(1-)	
		214m	3.4 ms	α	-0.843	(9-)	
		215	0.12 μs	α , no γ	0.309	9/2-	
		216	0.70 μs	α , no γ	2.975		
		217	22 μs	α , no γ	4.307	9/2-	
		218	≈ 0.7 ms	α	7.050		
		219	0.020 s	α	8.617	(9/2)-	
		220	27.4 s	α 99.65%, β^- 0.35%	11.470		
		221	4.8 m	α	13.265	(5/2-)	
		222	14.4 m	β^- 99+%, α 0.01-0.1%	16.338		
		223	21.8 m	β^- 99+%, $\alpha \approx 0.005\%$	18.382	(3/2)	
		224	2.7 m	β^-	21.71 s		
		225	3.9 m	β^-	23.79 s		
		226	48 s	β^-	27.46		

TABLE OF NUCLIDES

Z	Nuclide El	A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
87	Fr	227	2.4 m	β^-	29.58		
		228	39 s	β^-			
		229	0.8 m	β^-			
88	Ra	206	0.4 s	$\alpha, (\text{EC}+\beta^+)?$	3.96 s	0+	
		207	1.3 s	$\alpha, (\text{EC}+\beta^+)?$	3.70 s		
		208	1.5 s	α	1.93 s	0+	
		209	4.7 s	α	1.97 s		
		210	3.7 s	α	0.61 s	0+	
		211	14 s	$\alpha, (\text{EC}+\beta^+)?$	0.78	(5/2-)	
		212	13.0 s	$\alpha, (\text{EC}+\beta^+)?$	-0.11 s	0+	
		213	2.7 m	α 80%, EC+ β^+ 20%	0.290	(1/2-)	
		213m	2.1 ms	IT \approx 99%, $\alpha \approx$ 1%	2.060	(17/2-, 13/2+)	
		214	2.46 s	α 99+%, EC 0.059%	0.090	0+	
		215	1.6 ms	α	2.531		
		216	0.18 μ s	α	3.285	0+	
		217	1.6 μ s	α	5.881		
		218	14 μ s	α	6.644	0+	
		219	10 ms	α	9.377		
		220	23 ms	α	10.263	0+	
		221	30 s	α	12.957		
		222	38 s	α	14.312	0+	
		223	11.435 d	α	17.235	1/2+	134 ^{rs}
		224	3.66 d	α	18.813	0+	12 ^{rs}
		225	14.8 d	β^-	21.987	(3/2)+	
		226	1.60 \times 10 ³ y	α	23.666	0+	8
		227	42.2 m	β^-	27.185	(3/2+)	
		228	5.76 y	β^-	28.941	0+	36 ^{sc}
		229	4.0 m	β^-	32.72 s		
		230	93 m	β^-	34.56 s	0+	
89	Ac	209	0.10 s	α	9.12 s		
		210	0.35 s	α	8.86 s		
		211	0.25 s	$\alpha, \text{EC}+\beta^+$	7.40 s		
		212	0.93 s	α	7.18 s		
		213	0.80 s	$\alpha, \text{no } \gamma$	6.17 s	(9/2-)	
		214	8.2 s	α \geq 86%, EC \leq 14%	6.14 s		
		215	0.17 s	α 99.91%, EC+ β^+ 0.09%	5.95		
		216	\approx 0.33 ms	α	7.98 s		
		216m	0.33 ms	α	8.02 s		
		217	0.11 μ s	$\alpha, \text{no } \gamma$	8.70 ⁺	(9/2-)	
		218	0.27 μ s	$\alpha, \text{no } \gamma$	10.837		
		219	7 μ s	$\alpha, \text{no } \gamma$	11.560	(9/2-)	
		220	26 ms	α	13.747		
		221	52 ms	α	14.518		
		222	5 s	α	16.617		
		222m	66 s	α \geq 90%, IT $<$ 10%, EC \approx 1%			
		223	2.2 m	α 99%, EC 1%	17.825	(5/2-)	
		224	2.9 h	EC \approx 90%, $\alpha \approx$ 10%	20.219		
		225	10.0 d	α	21.626	(3/2-)	
		226	29 h	β^- 83%, EC 17%, α 0.006%	24.30 ⁺	(1-)	
		227	21.773 y	β^- 98.62%, α 1.38%	25.850	3/2-	900 ^{sc}
		228	6.13 h	β^-	28.895	(3+)	
		229	62.7 m	β^-	30.72	(3/2+)	
		230	122 s	β^-	33.76 s		
		231	7.5 m	β^-	35.9 ⁺	(1/2+)	
		232	35 s	[β^-]	39.15 s		
90	Th	215	1.2 s	α	10.87	(1/2-)	
		216	0.028 s	α	10.39 s	0+	
		217	0.25 ms	α	12.141		
		218	0.10 μ s	α	12.362	0+	
		219	1.05 μ s	α	14.470		
		220	10 μ s	α	14.663	0+	
		221	1.7 ms	α	16.934		
		222	2.8 ms	α	17.197	0+	
		223	0.66 s	α	19.256		
		224	1.04 s	α	19.993	0+	

TABLE OF NUCLIDES

Nuclide			Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(\text{b})$
Z	El	A					
90	Th	225	8.0 m	$\alpha \approx 90\%, \text{EC} \approx 10\%$	22.303	(3/2+)	
		226	30.9 m	α	23.189	0+	
		227	18.718 d	α	25.806	3/2+	200 f^s
		228	1.9131 y	α	26.758	0+	100 f^s
		229	7.3×10^3 y	α	29.581	5/2+	30 f
		230	8.0×10^4 y	α	30.861	0+	40
		231	25.52 h	β^-	33.812	5/2+	
		232	100% 1.41×10^{10} y	α	35.447	0+	7.4
		233	22.3 m	β^-	38.732	1/2+	$1.4 \times 10^{-3} \text{sc}$
		234	24.10 d	β^-	40.612	0+	2.0
		235	6.9 m	β^-	44.15 s		
		236	37 m	β^-	46.64 s	0+	
91	Pa	216	0.20 s	α			
		217	≈ 10 ms	α			
		222	5.7 ms	α	21.959		
		223	6 ms	α	22.330		
		224	0.9 s	α	23.798		
		225	1.8 s	α	24.320		
		226	1.8 m	α 74%, EC 26%	26.029		
		227	38.3 m	$\alpha \approx 85\%, \text{EC} \approx 15\%$	26.832	(5/2-)	
		228	22 h	EC $\approx 98\%, \alpha \approx 2\%$	28.870	3+	
		229	1.4 d	EC 99.75%, α 0.25%	29.887	(5/2+)	
		230	17.7 d	EC 90%, β^- 10%, α 0.0032%	32.166	(2-)	$1.5 \times 10^3 f^s$
		231	3.28×10^4 y	α	33.423	3/2-	200
		232	1.31 d	β^-	35.934	(2-)	800 f^s
							700 f^s
							20 m
		233	27.0 d	β^-	37.487	3/2-	19 g
		234	6.75 h	β^-	40.349	4(+)	$< 5 \times 10^3 f^s$
		234m	1.175 m	β^- 99.87%, IT 0.13%	≈ 40.43	(0-)	$< 500 f^s$
		235	24.2 m	β^-	42.32	(3/2-)	
		236	9.1 m	β^-	45.54	(1-)	
		237	8.7 m	β^-	47.64	(1/2+)	
92	U	238	2.3 m	β^-	51.27	(3-)	
		226	0.5 s	α	27.186	0+	
		227	1.1 m	α	28.88 s		
		228	9.1 m	$\alpha \geq 95\%, \text{EC} \leq 5\%$	29.221	0+	
		229	58 m	EC $\approx 80\%, \alpha \approx 20\%$	31.201	(3/2+)	
		230	20.8 d	α	31.607	0+	20 f^s
		231	4.2 d	EC 99+%, α 0.0055%	33.78	(5/2)	$\approx 300 f^s$
		232	72 y	α	34.597	0+	74
							76 f
							530 f
		233	1.592×10^5 y	α	36.915	5/2+	46
		234	0.0054% 2.45×10^5 y	α	38.143	0+	100 g+m
		235	0.720% 7.038×10^8 y	α	40.916	7/2-	580 f
		235m	26 m	IT	40.916	1/2+	98
		235f	20 ns?	SF			
		236	2.342×10^7 y	α	42.442	0+	5.1
		236f	0.12 μ s	SF	44.79		
		237	6.75 d	β^-	45.389	1/2+	400
		238	99.275% 4.468×10^9 y	α	47.307	0+	2.7
		238f	0.19 μ s	IT $\approx 96\%, \text{SF} \approx 4\%$	49.866	(0+)	
93	Np	239	23.5 m	β^-	50.572	5/2+	22 f^s
							15 f^s
		240	14.1 h	β^-	52.712	0+	
		229	4.0 m	$\alpha \geq 50\%, \text{EC} \leq 50\%$	33.758		
		230	4.6 m	α 99+%, EC+ β^+ $\leq 0.97\%$	35.232		
		231	48.8 m	EC $< 99\%, \alpha > 1\%$	35.626	(5/2)	

TABLE OF NUCLIDES

Z	El	Nuclide A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
93	Np	232	14.7 m	EC	37.29 s		
		233	36.2 m	EC 99+%, $\alpha \approx 0.001\%$	38.01 s	(5/2+)	
		234	4.4 d	EC 99.95%, β^+ 0.05%	39.951	(0+)	$1.0 \times 10^{-3} f^s$
		235	396 d	EC 99+%, α 0.0016%	41.040	5/2+	$160 \frac{f^s}{22.5 n}$
		236	1.1×10^5 y	EC 91%, β^- 9%		(6-)	$3 \times 10^3 f$
		236	22.5 h	EC 50%, β^- 50%	43.426	1(-)	
		237	2.14×10^6 y	α	44.869	5/2+	180
		237f	45 ns	SF	47.57		
		238	2.117 d	β^-	47.453	2+	$2.1 \times 10^{-3} f^s$
							$32 \frac{f^s}{m}$
		239	2.35 d	β^-	49.306	5/2+	$\approx 20 \frac{f^s}{g}$
		240	67 m	β^-	52.21	(5+)	
		240m	7.5 m	β^- 99.89%, IT 0.11%		1(-)	
		241	16.0 m	β^-	54.31		
94	Pu	232	34 m	EC $\geq 80\%$, $\alpha \leq 20\%$	38.362	0+	
		233	20.9 m	EC 99.88%, α 0.12%	40.042		
		234	8.8 h	EC 94%, α 6%	40.342	0+	
		235	25.6 m	EC 99+%, α 0.003%	42.16	(5/2)+	
		235f	30 ns	SF	43.86		
		236	2.85 y	α	42.889	0+	$150 f^s$
		236f ₁	0.03 ns	SF			
		236f ₂	0.03 μ s	SF	46.39		
		237	45.4 d	EC 99+%, α 0.0033%	45.087	7/2-	$2.1 \times 10^{-3} f^s$
		237m	0.18 s	IT	45.233	1/2+	
		237f ₁	0.11 μ s	SF	47.39		
		237f ₂	1.1 μ s	SF	47.69		
		238	87.74 y	α	46.161	0+	$500 f^s$
							$17 f^s$
		238f ₁	0.6 ns	SF	48.56		
		238f ₂	6 ns	SF	49.86		
		239	2.41×10^4 y	α	48.585	1/2+	$742 f$
							$27 f$
		239f ₁	8 μ s	SF	50.79		
		239f ₂	0.01 μ s?	SF			
		240	6.57×10^3 y	α	50.123	0+	290
		240f	3.8 ns	SF	52.52	(0+)	
95	Am	241	14.4 y	β^- 99+%, α 0.0024%	52.953	5/2+	$1.01 \times 10^{-3} f$
							370
		241f ₁	24 μ s	SF	54.95		
		241f ₂	30 ns?	SF			
		242	3.76×10^5 y	α	54.715	0+	19
							$< 0.2 f$
		242f ₁	4 ns	SF			
		242f ₂	28 ns	SF			
		243	4.956 h	β^-	57.752	7/2+	$200 f^s$
							$100 f^s$
		243f	0.05 μ s	SF	59.55		
		244	8.1×10^7 y	α	59.803	0+	1.7
		244f	0.4 ns	SF			
		245	10.5 h	β^-	63.157	(9/2-)	150
		246	10.85 d	β^-	65.29	0+	
		232	1.4 m?	[EC+ β^+], (EC+ β^+)SF			
		234	2.6 m	[EC+ β^+], (EC+ β^+)SF	44.46 s		
		235f	?	SF			
		236f	?	SF			
		237	1.22 h	EC 99+%, α 0.025%	46.64 s	5/2(-)	
		237f	5 ns	SF	48.74 s		
		238	1.63 h	EC 99+%, α $1.0 \times 10^{-4}\%$	48.417	1+	
		238f	35 μ s	SF	50.72		
		239	11.9 h	EC 99+%, α 0.010%	49.389	5/2-	
		239f	0.16 μ s	SF	51.89		
		240	50.8 h	EC 99+%, α $1.9 \times 10^{-4}\%$	51.443	(3-)	
		240f	0.9 ms	SF	54.04		

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
95	Am 241	433 y	α	52.932	5/2-	562_g 62_m 3.2_f
	241f	1.5 μs	SF	55.13		
	242	16.01 h	β^- 82.7%, EC 17.3%	55.463	1-	$2.1 \times 10^3 f^{rs}$
	242m	152 y	IT 99.52%, α 0.48%	55.511	5-	$7.4 \times 10^3 f^{rs}$ $1.6 \times 10^3 rs$
	242f	14.0 ms	SF	57.76		
	243	7.37×10^3 y	α	57.170	5/2-	80_m^{rs} 6_g^{rs}
	243f	5 μs	SF	59.17		
	244	10.1 h	β^-	59.877	(6-)	$2.2 \times 10^3 f^{rs}$
	244m	26 m	β^- 99+%, EC 0.036%	59.948	(1-)	$1.6 \times 10^3 f^{rs}$
	244f	1.1 ms	SF	61.48		
	245	2.05 h	β^-	61.897	(5/2)+	
	245f	0.6 μs	SF			
	246	39 m	β^-		(7-)	
	246	25.0 m	β^-	64.92	(2-)	
	246f	0.07 ms	SF			
	247	24 m	β^-	67.13 s	(5/2)	
96	Cm 238	2.3 h	EC <90%, α >10%	49.398	0+	
	239	2.9 h	EC	51.09 s		
	240	27 d	α	51.712	0+	
	240f	10 ps	SF			
	241	32.8 d	EC 99.0%, α 1.0%	53.696	1/2+	
	241f	15 ns	SF	55.70		
	242	162.8 d	α	54.802	0+	20 $<5 f^{rs}$
	242f ₁	0.04 ns	SF			
	242f ₂	0.2 μs	SF	57.60		
	243	28.5 y	α 99.74%, EC 0.26%	57.177	5/2+	$1.0 \times 10^3 f^{rs}$ $6 f^{rs}$ 130
	243f	0.04 μs	SF	58.68		
	244	18.11 y	α	58.450	0+	14 1.0
	244(f ₁)	<5 ps?	[SF]			
	244(f ₂)	>100 ns	SF	61.45		
	245	8.5×10^3 y	α	61.001	7/2+	2.0×10^3 350
	245f	13 ns	SF	62.70		
	246	4.7×10^3 y	α	62.616	0+	1.3 0.2 $100 f^{rs}$
	247	1.6×10^7 y	α	65.530	9/2-	60 $4 sc$
	248	3.5×10^5 y	α 91.74%, SF 8.26%	67.389	0+	0.3 2^{rs}
	249	65 m	β^-	70.748	1/2+	
	250	$\leq 1.1 \times 10^4$ y	SF	72.986	0+	$\approx 80^{rs}$
	251	16.8 m	β^-	76.67 s	(1/2+)	
97	Bk 240	5 m	EC+ β^+ , (EC+ β^+)SF 0.001%	55.71 s		
	242	7 m	EC	57.80 s		
	242f ₁	0.6 μs	SF			
	242f ₂	10 ns	SF			
	243	4.5 h	EC 99.85%, α 0.15%	58.685	(3/2-)	
	243f	5 ns	SF	60.88		
	244	4.4 h	EC 99+%, α 0.006%	60.646		
	244f	0.8 μs	SF			
	245	4.90 d	EC 99.88%, α 0.12%	61.811	3/2-	
	245f	2 ns	SF			
	246	1.80 d	EC	64.02 s	(2-)	
	247	1.4×10^3 y	α	65.484	(3/2-)	

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	$J\pi$	$\sigma_n(b)$
97	Bk 248	23.5 h	β^- 70%, EC 30%	67.99 s	(1-)	
	248	>9 y	?	67.99 s	(6+)	
	249	0.88 y	β^- 99+%, α 0.0015%	69.848	7/2+	$1.0 \times 10^3 f_s$
	250	3.22 h	β^-	72.950	2-	$1.0 \times 10^3 f_s$
	251	56 m	β^-	75.25 s	(3/2-)	
98	Cf 240	1.1 m	α	58.03 s	0+	
	241	4 m	α	59.19 s		
	242	3.5 m	α	59.332	0+	
	243	11 m	[EC] \approx 86%, α \approx 14%	60.91 s		
	244	19 m	α	61.465	0+	
	245	44 m	EC \approx 70%, α \approx 30%	63.377		
	246	35.7 h	α	64.096	0+	
	246f	0.05 μ s	SF			
	247	3.15 h	EC 99.96%, α 0.04%	66.15 s	(7/2+)	
	248	333 d	α	67.243	0+	
	249	351 y	α	69.722	9/2-	$1.63 \times 10^3 f_s$ 480 sc
	250	13.1 y	α	71.170	0+	$2.0 \times 10^3 sc$ <350 f _s
	251	9.0×10^2 y	α	74.127	1/2+	$4 \times 10^3 sc$ $2.9 \times 10^3 sc$
	252	2.64 y	α 96.91%, SF 3.09%	76.031	0+	32 f _s 20
	253	17.8 d	β^- 99.69%, α 0.31%	79.299	(7/2+)	$1.3 \times 10^3 f_s$
	254	60.5 d	SF 99.69%, α 0.31%	81.342	0+	100 f _s
	255	\approx 2 h?	[β^-]			
	256	12 m	SF		0+	
99	Es 243	21 s	α	64.80 s		
	244	37 s	EC+ β^+ 96%, α 4%	65.97 s		
	245	1.3 m	EC 60%, α 40%	66.38 s		
	246	7.7 m	EC+ β^+ 90%, α 10%	67.93 s		
	247	4.7 m	EC \approx 93%, α \approx 7%	68.550		
	248	28 m	EC \approx 99.7%, α \approx 0.3%	70.22 s		
	249	1.70 h	EC 99.4%, α 0.6%	71.116	(7/2+)	
	250	8.6 h	EC	73.17 s	(6+)	
	250	2.1 h	EC	73.17 s	(1-)	
	251	33 h	EC 99.5%, α 0.5%	74.507	(3/2-)	
	252	472 d	α 78%, EC 22%	77.15 s	(5-)	
	253	20.47 d	α	79.012	7/2+	160 m <3 g <60 f _s
	254	276 d	α	81.992	(7+)	$2.8 \times 10^3 f_s$
	254m	39.3 h	β^- 99.59%, α 0.33%, EC 0.08%	82.070	2+	$1.8 \times 10^3 f_s$
	255	38.3 d	β^- 92.0%, α 8.0%, SF 0.004%	84.12 s	(7/2+)	65 f _s
	256	7.6 h	β^-	87.26 s	(7,8)	
	256	22 m	β^-	87.26 s		
100	Fm 242	0.8 ms?	SF		0+	
	244	3.3 ms	SF	68.77 s	0+	
	245	4 s	α	70.02 s		
	246	1.2 s	α 92%, SF 8%	70.131	0+	
	247	9 s	α	71.54 s		
	247	35 s	α \geq 50%, EC \leq 50%	71.54 s		
	248	36 s	α 99.9%, SF 0.1%	71.891	0+	
	249	3 m	α	73.50 s		
	250	30 m	α , EC?	74.069	0+	
	250m	1.8 s	IT			
	251	5.3 h	EC 98.2%, α 1.8%	76.00 s	(9/2-)	
	252	25.4 h	α	76.822	0+	
	253	3.0 d	EC 88%, α 12%	79.346	1/2+	
	254	3.240 h	α 99+%, SF 0.0590%	80.899	0+	
	255	20.1 h	α	83.793	7/2+	$3.3 \times 10^3 f_s$

TABLE OF NUCLIDES

Z	Nuclide El A	Abundance or $t_{1/2}$	Decay Mode	$\Delta(\text{MeV})$	J π	$\sigma_n(\text{b})$
100	Fm 256	2.63 h	SF 91.9%, α 8.1%	85.481	0+	
	257	100.5 d	α 99.79%, SF 0.21%	88.588	(9/2+)	$6 \times 10^3 \text{ }^{\text{sc}}_0$ $3.0 \times 10^3 \text{ }^{\text{f}}_0$
	258	0.4 ms	SF		0+	
	259	1.5 s	SF			
101	Md 248	7 s	EC+ β^+ 80%, α 20%	77.00 s		
	249	24 s	EC+ β^+ \lesssim 80%, α \gtrsim 20%	77.26 s		
	250	0.9 m	EC+ β^+ 94%, α 6%	78.60 s		
	251	4.0 m	EC \gtrsim 90%, α \lesssim 10%	79.03 s		
	252	2 m	EC+ β^+	80.50 s		
	254	10 m	EC	83.39 s		
	254	28 m	EC	83.39 s		
	255	27 m	EC 92%, α 8%	84.843	(7/2-)	
	256	75 m	EC 90.1%, α 9.9%	87.42 s		
	257	5.0 h	EC 90%, α 10%	89.04 s	(7/2-)	
	258	56 d	α	91.82 s		
	258	43 m	EC(?)	91.82 s		
	259	1.6 h	SF			
102	No 250	0.25 ms?	SF		0+	
	251	0.8 s	α			
	252	2.3 s	α 73%, SF 27%	82.867	0+	
	253	1.7 m	α	84.33 s		
	254	55 s	α	84.729	0+	
	254m	0.28 s	IT			
	255	3.1 m	α 62%, EC 38%	86.87 s	(1/2+)	
	256	3.2 s	α \approx 99.7%, SF \approx 0.3%	87.801	0+	
	257	26 s	α	90.223		
	258	1.2 ms	SF	91.52 s	0+	
	259	58 m	α \approx 78%, EC \approx 22%	94.012		
103	Lr 255	22 s	α	90.25 s		
	256	27 s	α	91.82 s		
	257	0.65 s	α	92.97 s		
	258	4.3 s	α	94.82 s		
	259	5 s	α	95.97 s		
	260	3.0 m	α	98.14 s		
104	253	1.8 s?	SF \approx 50%(?)			
	254	0.5 ms?	SF		0+	
	255	2 s?	SF \approx 50%			
	256	\approx 5 ms?	SF		0+	
	257	5 s	α	95.95 s		
	258	11 ms?	SF	96.55 s	0+	
	259	3 s	α	98.50 s		
	260	0.08 s?	SF	99.23 s	0+	
105	261	1.1 m	α	101.25 s		
	255	\approx 1.2 s?	SF \approx 20%			
	257	5 s?	SF \approx 20%			
	260	1.5 s	α 90%, SF 10%	103.65 s		
	261	2 s	α \approx 75%, SF \approx 25%	104.46 s		
106	262	0.7 m	α \approx 40%, SF or EC(?) \approx 60%	106.04 s		
	259	4 to 10 ms?	SF \approx 70%(?)			
	263	0.9 s	α			
107	261	1 to 2 ms?	SF \approx 20%			